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SHOP EQUIPMENT REVIEW

Semi-annual résumé of machines, tools and accessories described in the Shop Equipment News section of the American Machinist during the first six months of 1927

Principal Developments

THE ninth semi-annual Shop Equipment Review number of the *American Machinist* covers in the American section, 292, and in the European section, 91 machines and pieces of equipment described during the six-month period ending June 30, 1927. As in the previous six months, the period has been one of refinement rather than development. Two noteworthy standardizations took place, however: Standard spindle ends were adopted by milling machine builders for milling machines from 2 to 25 hp. and standards for T-slots for machine tools were adopted by machine tool builders and standardization bodies.

There is a definite trend toward single-purpose equipment of the so-called manufacturing type and away from machines of a more universal nature. The design of these machines is such, however, that only a few key parts need be interchanged to make the machine adaptable to a wider variety of work. English machines, on the other hand, have a much more complete range. Radial drills, for instance, have heads that can be tilted at any reasonable angle in their own plane and at the same time the entire horizontal arm can be rotated about its axis.

Where improvements have been made over former models, three features are usually sought: greater rigidity so that accuracy can be maintained with heavy cuts and feeds; anti-friction bearings; and better lubrication of vital parts, usually by some automatic means. The tendency is also toward full or semi-automatic control. This is particularly easy to attain with hydraulic feed which is becoming increasingly popular, especially with horizontal drilling and boring machines, although several grinding machines are so controlled also.

This type of feed, in turn, makes integral motor drive desirable. In this case the motor is built into the tool head and traversed with it. Several grinders have also appeared with self-contained drive employing three motors for the wheelspindle, workspindle and feed, respectively. Full advantage of the possibilities of electric drive is taken by using a variable-speed d.c. driving motor on the workspindle.

An unusual number of gear cutting machines are described, three of them German importations. The characteristic improvements seem to be greater rigidity and improved methods of lubrication. Machines of the hobbing type predominate. There are also a large number of grinding machines of all kinds, including a miscellaneous lot of general and special-purpose machines of the face and surface type, one a double-head machine said to be one of the largest ever built. Among the special grinders are a way-grinding machine and machines for finishing crankpins (locomotive), crankshafts, leaf-spring eyes, rolls and slitter disks.

Few developments have taken place in lathes. Two improved engine lathes are shown and two turret lathes for general use. One of the last is a vertical machine with spiral bevel gear drive to the table for smoothness of operation. Two special-purpose manufacturing lathes are also described. Among milling machines, a large planer type stands out. It has two rail and two side heads, all independently controlled. One company has placed roller bearings on the main spindle, while another has brought out two special millers for railroad use. An improved line with new sizes of draw-cut planers and shapers have also appeared.

Listed among "Other Machines" are several important developments in automatic chucking machines. Finishing machines of various types are also prominent. Three of them employ belt sanders, two of which feature centerless feed. Two portable sanders are included. In the miscellaneous group there is a large-size drop hammer, two metal profiling machines, three new sizes of punch and shear cutting machines, and several automatic welding machines. Considerable welding apparatus is described elsewhere.

The usual variety of small tools is included. In the group of miscellaneous equipment are a variety of electrical devices, including controllers, measuring instruments, and motors, and a rather complete list of speed reducers. Among measuring apparatus are static and dynamic balancing machines, comparator, supermicrometer, pitch-measuring machine, measuring microscope and a new system of measuring units.

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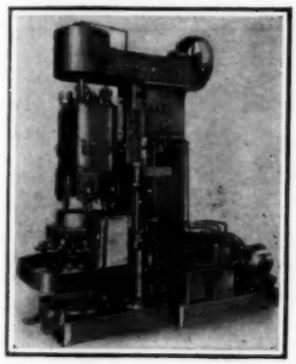
Boring and Turning Machines

— 1 —

Boring and Drilling Machine, Hydraulic, No. 50 H

Baker Brothers, Inc., Toledo, Ohio. [Vol.66,p.349]

The No. 50 H vertical boring and drilling machine with twin hydraulic feeds is a production machine and can be furnished in a variety of sizes and capacities. Modifications can be made as to clearances, number of spindles, center distance between spindles and other features to take care of a wide variety of work. It is adapted for use in connection with an



indexing table or fixture, either for successive operations on the same piece or for a long drilling operation where it is desirable to perform the drilling in steps.

Two cylinders are used for the feed mechanism, which is the pull type. The feed is started by foot pedal and thereafter is entirely automatic. An Oilgear pump furnishes the hydraulic pressure.

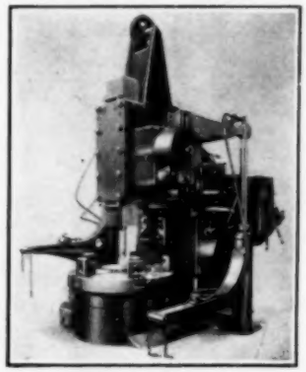
The machine can be furnished with either belt or motor drive. In the latter case, two motors are required, one for driving the machine itself and the other for driving the hydraulic feed pump. The pump requires 3 hp. and the main drive requires a motor ranging from 10 to 40 hp., depending upon the size of the work.

— 2 —

Boring and Facing Mill, Car-Wheel, Extra-Heavy

Betts Works of the Consolidated Machine Tool Corporation of America, Rochester, N. Y. [Vol. 66,p.390]

The extra-heavy car-wheel boring and facing mill is intended for the rapid production of rolled or cast-steel car wheels. It will rough bore and



face steel wheels ranging from 20 to 42 in. in diameter.

The chuck is fully automatic in its action, and is equipped with five heavy jaws designed to accommodate wheels with the flanges either up or down. The main drive is furnished by a 50-hp. variable-speed motor with automatic push-button control.

The vertical boring spindle is made of steel of heavy rectangular section, as is the horizontal facing spindle. Both spindles have a suitable range of power feed and also independent power rapid traverse by means of separate driving motors.

Two pneumatic hoists are used for handling the wheels to and from the chuck.

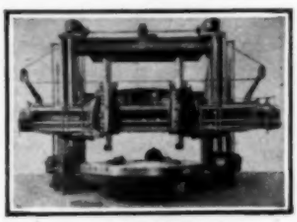
— 3 —

Boring and Turning Mill, Vertical, 18-Foot

Niles Tool Works Co., Division of the Niles-Bement-Pond Co., Hamilton, Ohio. [Vol.66, p.674]

The 18-ft. vertical boring and turning mill embodies many improved features and is built of considerably heavier proportions than previous types.

The table is supported on the bed on double annular tracks,



one as near as possible to the table drive gear, the other close to the table spindle, and pressure lubrication is supplied to both the table track and the spindle.

The crossrail is of the square-box type, the section between the housings being uniform throughout its length. A camber beam of deep section is attached to the crossrail to prevent deflection.

Two separate motors, one on each end of the rail, are provided for the rapid traverse of saddles and bars. Each head has its own independent and reversible feed, engaged by friction clutches. The saddle and bar feed of one head may be engaged simultaneously for cutting various tapers from the horizontal.

In order to provide safety and convenience, the operating levers have been duplicated at the saddles and ends of the rail.

— 4 —

Boring and Drilling Machine, Duplex, Horizontal

Baker Brothers, Inc., Toledo, Ohio. [Vol.66,p.673]

The multiple-spindle duplex horizontal boring machine was developed for simultaneously rough and finish boring of the idler-shaft, mainshaft and countershaft bores in two transmission cases. Both the machines and the fixtures can be

modified within wide limits for different drilling operations.

The heads on each end slide on wide ways and each is driven by a direct-connected motor. Feed of each is obtained by Oilgear duplex hydraulic cylinders having independent oil pumps driven by single motors.

The fixture is mounted on Timken bearings and is indexed by hand. Chips from the boring operation fall onto a screw-type conveyor that carries them to the end of the machine.

After the machine is started by a treadle, further operation is automatic including rapid advance, slow feed and rapid return.

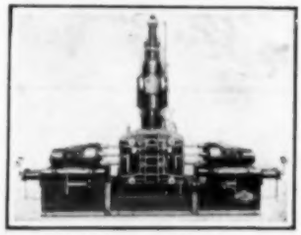
The weight of the machine as shown complete with fixtures is approximately 15 tons.

— 5 —

Boring Machine, Three-Way, Combination

Rockford Drilling Machine Co., Rockford, Ill. [Vol.66,p. 1110]

The combination three-way boring machine has two opposed horizontal heads and one vertical head. In the particular set-



up shown nine holes are bored simultaneously in transmission cases.

The motors are built directly into the head and spur pick-off gears are used for speed variations. There is also available two quick changes of speeds through a lever control. All rotating parts are mounted on Timken tapered roller bearings and run in a bath of oil.

The spindles are incorporated in a complete unit that fits to the front of the head proper and are interchangeable.

In each case the entire head is traversed on the ways by means of an Oilgear pump and cylinder. Either hand or automatic control is available, depending upon the requirements. The fixture can be swung forward on a pivot so that the work can be loaded and clamped.

Drilling Machines

— 6 —

Drilling Machine, 12-Inch, "Hi-Speed"

Buffalo Forge Co., Buffalo, N. Y. [Vol.66,p.195]

This machine is designed to operate at 3,600, 4,800, 7,200 and 10,000 r.p.m. Changes in speed are secured by means of a lever and a quick-acting screw. The machines, which are equipped with No. 3C Jacobs balanced chucks with a capacity of $\frac{7}{8}$ in., can be furnished with either belt or motor drive. Ball bearings are used throughout.

The height of the machine is 34 in. and the maximum height of the spindle from the table is 6$\frac{1}{2}$ in. The spindle travel is

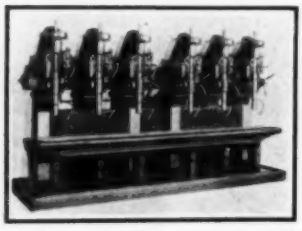
3½ in., and the speed of the drive pulley is 1,800 r.p.m. The net weight of the drill is 215 pounds.

— 7 —

Drilling and Tapping Machine, No. 242

Barnes Drill Co., Rockford, Ill. [Vol.66,p.953]

This self-oiling, all-geared production drilling and tapping machine, known as No. 242, has



a capacity for drilling holes 1⅛ in. in diam. in steel.

The head is made thick from front to rear and is flanged onto a massive column. Slip-block supports are placed directly under the spindle, and the table height can be varied in 3-in. steps. The table is securely gibbed to the column ways to minimize deflection.

All diagonal transmission shafts and the crown pinion and gear run on Timken roller bearings, while the drive shaft and cross spindle shafts are mounted on Fafnir ball bearings. The spindle thrust is taken on a roller bearing.

The quick-change, spur-gear feed unit is entirely inclosed inside the main frame of the machine. Eight changes of speed are available, ranging from 0.0055 to 0.062 in. per rev. Eight quick changes of spindle speeds, ranging from 64 to 708 r.p.m., are also available. For tapping operations reversing multiple-disk clutches and gears are added to the drive shaft.

The machine is furnished in gangs from 2 to 6 spindles.

— 8 —

Drilling Machines, Sensitive, with Built-in Motor Drive

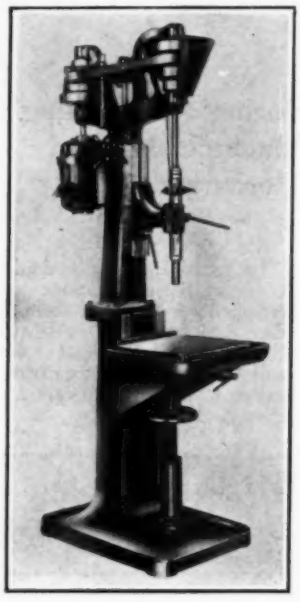
Edlund Machinery Co., Inc., Cortland, N. Y. [Vol.66,p.394]

In this sensitive drilling machine a 1-hp. motor is bolted to a plate on the back of the frame and has a long shaft which extends into and drives the rear cone. An arm of the one-piece frame extends over the rear cone and supports it at the top. In this way all belt pull is removed from the motor shaft.

The machine can be furnished with or without power feed and either with one spindle or in gangs up to six. It has a capacity of ¾ in. and is of the same general construction as this company's No. 2 B machine.

The No. 2 B machine, not shown, has a built-in tapping spindle and employs ball bearings throughout. Any number of spindles up to six can be supplied. Three tapping speeds are provided. The tapping spindle may also be used for drilling.

The vertical traverse of the spindle is 6½ in., that of the



arm 9½ in., and that of the table 16½ in. The spindle is 8 in. from the column base. The single-spindle machine has a table surface of 14½x16 in., while the six-spindle machine has a surface of 16x63½ inches.

— 9 —

Drilling Machine, Sensitive, "Little General"

Joseph T. Ryerson & Son, Inc., Chicago, Ill. [Vol.66,p.574]

This unconventional machine is designed to meet the needs of general shop service or production work when required. With straight-shank drills it has a drilling capacity of ½ in. With turned down shanks, it is possible to drill a 1-in. hole in brass, or, with care, in cast iron.

The drive is effected through fiber V-disks tapered to an angle of 18 deg. They mesh with grooves disposed at a corresponding angle giving a positive friction drive.

The spindle swings in a complete circle around the column, and the table swings in a semi-circle. Both the table and the head have large vertical adjustments. A direct-reading speed-

shift dial indicates each of the eighteen speeds and the size of drill best adapted to the various materials.

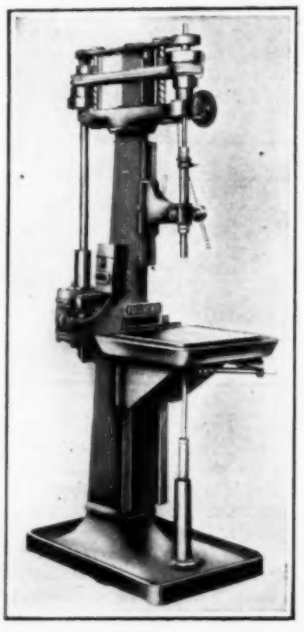
An accurate depth gage graduated in both inches and millimeters is also provided.

— 10 —

Drilling Machine, Sensitive, Improved, "Footburt-Sipp"

Foote-Burt Co., Cleveland, Ohio. [Vol.66,p.950]

An improved type of motor mounting is now being applied to the "Footburt-Sipp" sensitive drilling machine. A constant-speed motor is mounted in a vertical position on the rear of the column and is connected direct to the vertical drive shaft, on top of which a four-step cone pulley is mounted.



The four spindle speeds made available are 544, 870, 1,360 and 2,180 r.p.m., respectively.

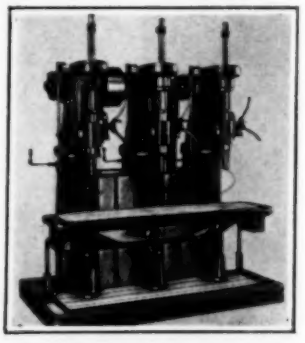
The motors are rated at ¾ hp. at 1,800 r.p.m., and are of the fully-inclosed type. This mounting is now available on the largest machine, which has a capacity for drilling holes up to ⅞ in. in diam, in cast iron.

— 11 —

Drilling Machine, Gang, All-Geared, No. 210

Barnes Drill Co., Rockford, Ill. [Vol.66,p.105]

The No. 210 all-geared gang drill is for single-purpose production work where frequent changes of speeds are not necessary. A wide range of speeds



can be selected, however, by interchanging the crown gear and the take-off feed gears. The machine is made in two, three, and four-spindle models.

Each head is a unit in itself, and contains all the working parts, including the pump for the self-oiling system. The gearing throughout is made of alloy steel and all important gears are heat-treated. In each head there are ten radial ball bearings of standard size.

Ordinarily individual motor drive is furnished the heads through flexible couplings, but silent chain motor drive with a single drive shaft for all spindles or a single-pulley drive may also be used.

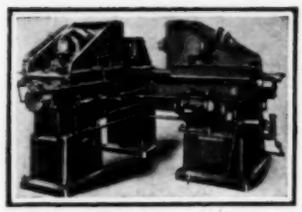
Depending upon the drive, spindle speeds ranging from 20 to 2,000 r.p.m. can be obtained. Feeds ordinarily range from 0.005 to 0.047 in. per rev. but faster feeds can be obtained for reaming.

— 12 —

Drilling Machine, Horizontal, Three-Way, Hydraulic-Feed, Natco

National Automatic Tool Co., Richmond, Ind. [Vol.66,p.434]

This three-way, hydraulic-feed drilling machine was designed to drill holes in three



sides of a transmission case at the rate of 120 cases per hour. The operator unloads and reloads the fixtures, starts the head travel, and the machine then automatically completes the cycle.

The machine is composed of three duplicate units grouped about the center table casting, and each can be set individually as to rapid advance, feed and rapid reverse.

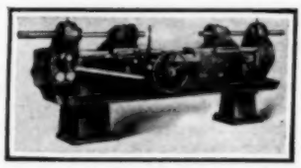
The feeding rate can be set at any amount up to the rapid traverse rate of approximately 75 in. per min. The machine is built in a wide range of sizes covering all kinds of work.

— 13 —

Drilling Machine, Horizontal, Duplex, No. 410

W. F. and John Barnes Co., Rockford, Ill. [Vol.66,p.432]

This machine is for general horizontal drilling up to a capacity equivalent to a 1-in. drill in steel. It may also be adapted to core drilling, boring, reaming, counterboring, chamfering



and facing. Special controls may also be incorporated to provide for tapping and threading.

The bed is a heavy semi-steel casting provided with cross ribs to prevent deflection. The heads and saddles are cast integral and are gibbed to the ways. The spindle bearings are bronze and the drilling thrust is taken on ball bearings.

The spindle drive is through a special sleeve driven direct from the main drive shaft to a train of gears.

Power feed to the head is provided through a right- and left-hand screw. Three combinations of feeds can be provided: Hand traverse and slow power feed with automatic knockout; hand traverse, slow power feed with automatic knockout, and automatic quick return; and hand traverse. power feed with tap lead, and automatic reverse.

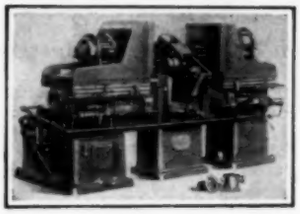
The machine is driven from one drive shaft along the back of the bed, by means of a tight and loose pulley. Motor drive can also be specified.

— 14 —

Drilling Machine, Horizontal, Type S-6-H, Two-Way Hydraulic

National Automatic Tool Co., Richmond, Ind. [Vol.66,p.550]

Unit-type of construction is used in making the machine adaptable to a wide range of work. One-, two-, three-, four-, or five-way machines can be built by grouping the individual



units around the center or table casting. The large cluster box area on the front of the heads also make them adaptable to close-grouped or widely-separated spindles.

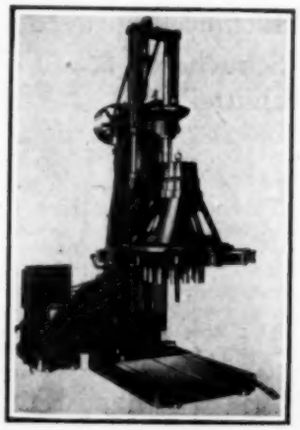
Each head unit is complete in itself and has individual motors for driving the spindles, individual hydraulic cylinders and feed control mechanism. The hydraulic cylinders have a 12-in. stroke which can be controlled by adjustible trip dogs. The feed rate can be varied up to the rapid traverse rate of 75 in. per min. The machine shown has a two-position trunnion fixture to enable the operator to unload one piece while drilling the other.

— 15 —

Drilling Machines, Multiple-Spindle, with Oilgear Feed

Harrington Co., 17th and Callowhill Sts., Philadelphia, Pa. [Vol.66,p.431]

This company has redesigned its vertical and horizontal multiple-spindle drills to include the Oilgear feed, which is applied



through balanced pressure cylinders in line with the guides.

In the vertical-type machine the base, column, bracket, spindles, head and gear chest are the same as for the previous standard No. 63-B machine. This type was designed especially for the drilling of the web in heavy structural beam and column units, while the horizontal machine is intended for drilling both flanges of beams and columns up to 30 in. in depth.

The automatic feed is capable of ready adjustment. The spindle heads can be arranged for rapid approach, coarse feed, fine feed and rapid return.

The vertical machine has a maximum drill area of a circle 29½ in. in diam., and a minimum center-to-center distance of spindle of 2¾ in. Each spindle has a capacity of 1⅞ in. drill in structural steel. Drive is by a 40-hp. motor having push-button control.

The horizontal machine has two 40-hp. motors, and by means of equalizing bars, a uniform feed for both heads is obtained. Standard Oilgear pumps are provided to actuate the hydraulic feed mechanism. The speeds may be varied from 0 to 20 in. per min. and the rapid traverse up to 120 in. per minute.

— 16 —

Drilling Machine, Special, for Hydrant Pipes

Morris Machine Tool Co., Cincinnati, Ohio. [Vol.66,p.716]

This machine is for drilling cast-iron hydrant pipes. It has two horizontal heads to drill the ends of the pipes and one

vertical head for drilling into the side. The two vises provided and the left-hand head are adjustable along the bed to take in pipe from 3 to 9 ft. in length. The vise jaws are independently adjustable to hold irregularly-shaped pipe from 4 to 10 in. in diameter.

Each spindle has an independent power feed with a dial depth gage and an automatic trip. The drill heads may be made with any number of spindles at any reasonable center distance to take care of various sizes of pipe. They have hardened and ground spindles mounted on fixed centers and carried on radial and thrust ball bearings.

The machine is driven by a 10-hp. motor with a silent chain to a horizontal shaft from which both heads are driven.

— 17 —

Drilling Units, Automatic

Langelier Manufacturing Co., Arlington, Cranston, R. I. [Vol.66,p.1111]

These automatic drilling units can be used for a number of operations such as reaming, hollow milling, facing, counterboring, countersinking, drilling,

forming and tapping. Single- or multiple-spindle heads can be obtained.

The units can be driven from individual motors through change gears, or by belts. The feed of the spindle is by a cam cut to give quick advance, feed, pull-out (if required) and quick return.

The units can be used in making up special machinery in conjunction with dial or magazine feeds. They are made in three sizes. The No. 11 size will take drills up to ⅞ in. in steel and counterbores up to ⅝ in. Speeds range from 1,400 to 7,500 r.p.m. The working cycles are from 10 to 70 per minute.

The No. 21 unit will take drills up to ⅝ in. and counterbores up to ¾ in. Speeds are from 560 to 5,250 r.p.m. The working cycles are from 5 to 25 per minute. The No. 31 automatic drill unit will take drills up to ¾ in. and counterbores up to 1¼ in. Speeds are from 280 to 3,000 r.p.m. The working cycles are from 5 to 20 per minute.

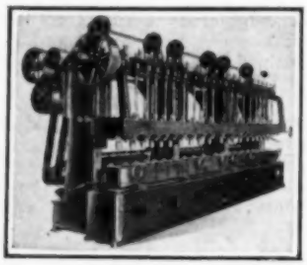
— 18 —

Drilling Machine, Rail, No. U-68

Moline Tool Co., Moline, Ill. [Vol.66,p.389]

The No. U-68 drilling machine has a capacity for drilling twenty 1-in. holes in steel rails of all sizes.

A 40-hp. motor is mounted on the bottom of the machine and is furnished with a two-step cone pulley and idler



tightener. Drive to the heads is through a steel helical screw running the entire length of the machine. The driving heads are laterally adjustable on the upper rail and transmit power to the spindles through universal-jointed telescoping shafts.

The drill spindles are fed down together, but have independent end adjustment. The feed-cycle is semi-automatic and includes rapid approach, slow drilling, and rapid return.

The spindles have in and out adjustment of 3 in. horizontally. The maximum distance between end spindles is 30 ft., 5 in. and the minimum distance between adjacent spindles is 4 inches.

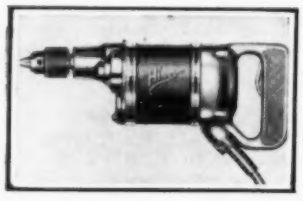
The machine weighs approximately 50,000 lb. It occupies a floor space of 6x23 feet.

— 19 —

Drill, Portable, Electric, ¼-Inch, Type 18-CU

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.66,p.354]

Like other Hisey drills, this tool is equipped with a motor of the company's own design and manufacture, particularly adapted to this type of service. Ball bearings are used and all



gears are made of high-grade heat-treated steel. The oversize chuck spindle is hardened and ground and carries a standard Jacobs chuck.

Brush holders with adjustable spring tension are mounted as a separate unit on an adjustable Bakelite yoke. An automatic quick-release type switch is mounted in the end grip handle.

— 20 —

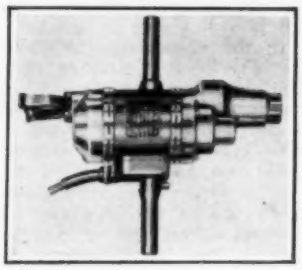
Drill, Electric, Universal, ⅞-Inch

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.66,p.1071]

The standard-duty ⅞-in. universal electric drill is equipped with a motor of this company's own design and manufacture. The motor is mounted on ball bearings which are fitted in such a way as to eliminate slip and creeping action.

All gears are made of high-grade steel, heat-treated and so proportioned as to give maximum strength and smooth operation. The compound gear shaft is supported with bearings at each end.

The drill spindle is of liberal dimensions, hardened and



ground, and is automatically lubricated. It is fitted with a No. 3 Morse taper socket.

The brush holders with adjustable spring tension are mounted as a separate unit on a bakelite yoke. A Hisey patented switch is standard equipment.

The drill weighs 25 pounds.

— 21 —

Drill Stand, Electric No. 1,005

Goodell-Pratt Co., Springfield, Mass. [Vol.66,p.910]

This No. 1,005 electric-drill stand is designed specially for this company's No. 1,042 ¾-in. heavy-duty drill. The drill is

locked by turning a thumbscrew, and a spring compensates for its weight.

The lever feed can be set to any depth up to 3½ in. The extreme distance between chuck and table is 11¾ in. and it is possible to drill to the center of a 9-in. circle. The overall height is 25 in. and the bench space required is 8½x12 inches.

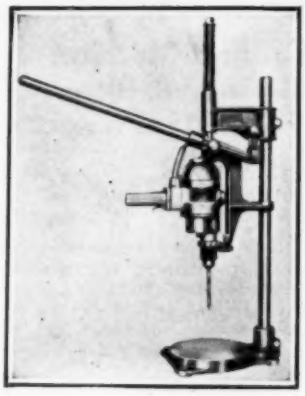
— 22 —

Bench Drill Stand

Van Dorn Electric Tool Co., Cleveland, Ohio. [Vol.66,p.475]

The bench drill stand is for use with this company's ½-, ⅝- and ¾-in. portable electric drills. Two screws in the top head and two screws through a clamp bracket hold the drill rigidly in place.

The design is such that the



line of pressure is brought directly over the twist drill. A tension spring lifts the drill out of the work when the handle is released.

The stand weighs 56 pounds.

— 23 —

Vise, Drill-Press, Universal, No. 6

Miller & Crowningshield, Greenfield, Mass. [Vol.66,p.713]

The rear block can be moved along the bars to any position and locked. A screw is used for quickly clamping and unclamping the work. Lugs are provided for fastening the vise to the drill press table when it is turned up on edge for drilling the end of a long bar. The swivel jaw of the vise can be locked in any position, or it can

be removed from its stud and the stud used for clamping irregularly-shaped pieces.

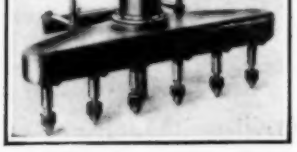
The width of the jaws is 6 in., the depth 1½ in., and the opening 8 in. The extreme length of the vise is 22 in. and it weighs 60 pounds.

— 24 —

Drill Speeder, Multiple-Spindle

Sellew Machine Tool Co., Pawtucket, R. I. [Vol.66,p.957]

This multiple-spindle drill speeder is made in two sizes and in four lengths of case. The spindles of the respective sizes



have Nos. 1 and 2 Morse taper holes, and the cases are 18, 24, 30 and 36 in. long.

The device clamps to the quill of a standard drill press and is driven by a tapered shank. The drive to the several small spindles is by means of a single silent chain.

The spindle units are self-contained and are adjustable to any position on a straight line between the two end units, or in a circular arc, if desired. Any number of spindles from two to the maximum capacity of the case can be obtained, and the minimum possible distance between centers is 1⅝ in. The weight of the device is balanced by a coil spring.

Gear Cutting Machines

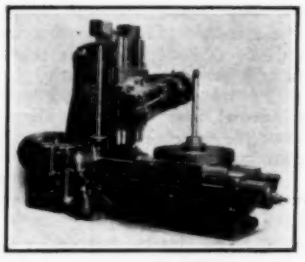
— 25 —

Gear Hobbing Machine, Improved, "Schuchardt & Schütte"

George Scheer Co., 142 Liberty St., New York, N. Y. [Vol.66,p.74]

This machine has been redesigned 20 per cent heavier. The cutter spindle, driven by helical gears, is of three bearing construction and has an integral flywheel.

The cutterhead is rigid and close to the upright, and the semi-circular casting nearly envelopes the hob. The ways of the bed are flat and wide. The table bearings, which con-



sist of V-shaped ways, a flat bearing, and a cylindrical bearings, are designed to prevent vibration and sagging under heavy cuts.

The dividing wormgear is of practically the same diameter as the table and directly under it. The worm is hardened and ground, runs against hardened-steel washers with provision for adjustment.

Quick return of the cutterhead is independent of the feed mechanism. Therefore, when cutting helical gears in two cuts, the rapid return is used without losing the lead of the spiral. The rapid traverse and feed mechanisms are interlocked.

The drive can be either by single pulley or by motor through the quick-change gear box, which furnishes eight cutter speeds.

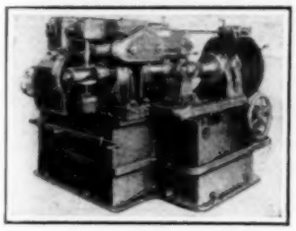
The machine can be equipped with a special tangential-feed cutterhead for producing wormwheels by means of a tapered hob.

— 26 —

Gear Generator, Improved, Sykes

Farrel Foundry & Machine Co., Buffalo, N. Y. [Vol.66, p.273]

This machine is made in three sizes to cut gears up to 24, 36 and 48 in. in diameter, respectively. It has been improved to permit of higher speeds and heavier cuts and it will cut straight-tooth gears, helical



gears, staggered-tooth, double-helical gears, and continuous-tooth Sykes gears.

The work saddle and tail brackets have been strengthened and the reciprocating carriage has been designed with a deeper box section. An oil well is incorporated in the cutter bed so that the carriage will be amply lubricated. The cutter head has a longer base and the bearing surfaces are covered by the keep plate. The feed gear box has been extended to the top of the machine to include all the moving parts of the relief mechanism and to lubricate them.

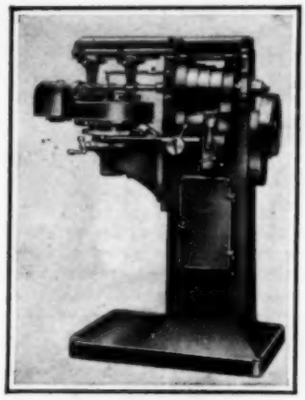
An automatic feed has been fitted to the work saddle. Other improvements include the introduction of ball bearings and automatic lubrication where practical.

— 27 —

Hobbing Machine, Automatic, No. 11, Pfauter

O. Zernickow Co., 15 Park Row, New York, N. Y. [Vol. 66,p.234]

The No. 11 Pfauter automatic horizontal hobbing machine is designed for generating small spiral spindles and spur and spiral gears. It is for pre-



cision work and the box columns, knee and overhanging arm are of ample proportions to prevent vibration and distortion under heavy cuts.

The main drive is by a 3-step cone pulley from an overhead countershaft. The dividing gear drive consists of a precision wormwheel and a worm of special material and the indexing is automatically effected.

The pieces to be hobbed are mounted horizontally between centers or by means of a draw-in collet. The work table travels in a swiveling slide mounted on the knee of the machine, and the blank can be set at any angle to the hob up to 80 deg. Since the hobber is essentially a production machine, the range of work is somewhat limited and no differential gear is provided. The regular equipment includes the necessary change wheels for one blank, the requisite feed change wheels, one hob arbor, four rings, a draw-in collet, a short and long collet bushing, a countershaft coolant pump and the necessary spanners and special parts for the machine.

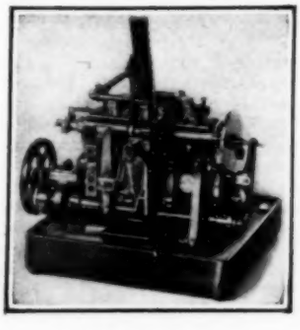
— 28 —

Gear Cutting Machine, Automatic, 1½-Inch

Waltham Machine Works, Waltham, Mass. [Vol.66,p.392]

A magazine feeding mechanism has been added to the 1½-in. pinion and gear cutting machine.

The magazine feed is for cutting solid or hollow pinions on a high-production basis. It is only necessary for the attend-



ant to place the blanks in the track of the magazine; thereafter the operation is automatic.

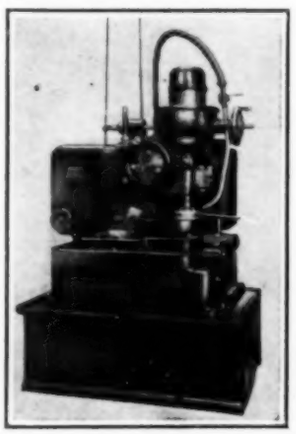
Ejection and chucking are performed in less than one second, so that the time gained through the use of the magazine is nearly equal to all of that required to change the work by hand. Besides this advantage of time, one operator can care for a larger number of machines than would otherwise be possible.

— 29 —

Gear Shaper With Side Trimming Attachment

Fellows Gear Shaper Co., Springfield, Vt. [Vol.66,p.558]

An improved method of machining automotive clutch gears, having hubs that are flush with or extend beyond the face, has been developed. It consists in



the use of a side-trimming gear shaper cutter, which completes the teeth in the clutch after they have been roughed out by drilling. The teeth are formed, not generated, and the cutter is made a duplicate of the male clutch member, with the exception that the teeth are reduced in thickness and the diameter of the cutter made larger to provide for clearance.

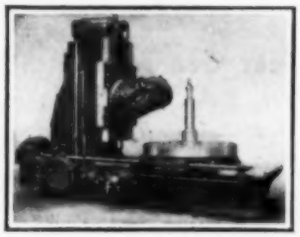
The cutting is accomplished by rotating the cutter while reciprocating it. It is rotated first in one direction and then in the other, thus side trimming the teeth to any desired width of tooth space.

— 30 —

Gear Hobbers, Improved, Pfauter

O. Zernickow Co., 15 Park Row, New York, N. Y. [Vol. 66,p.556]

These machines have been made heavier and more powerful. The main upright driving shaft has a flywheel at the bottom, and a flywheel can also be furnished on the cutter head,



if desired. Both the upright and the bed have been made wider and heavier. The hydraulic table load balancing device can now be furnished for the No. 4 size, as well as the Nos. 5 and 6 sizes.

The cutter-head slide is much wider, and the general design is such as to reduce the overhang to a minimum to eliminate chatter. The hob spindle runs in extra large bearings. The cutter head is balanced through a counterweight supported by roller chains.

The table construction has also been improved. The machines are now arranged for single pulley drive in conjunction with change gears, but individual motor drive can also be furnished.

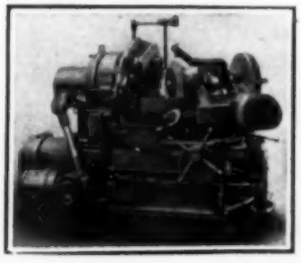
An unlimited number of speeds can be obtained through the change gears. In addition, there is incorporated in the feed mechanism a device that allows the operator to obtain three different feed changes without changing gears. A coolant pump is furnished with every machine.

— 31 —

Gear Generator, Straight-Bevel, 12-Inch

Gleason Works, Rochester, N. Y. [Vol.66,p.553]

This generator cuts straight bevel gears with two tools, using the same basic principle embodied in other well-known



Gleason bevel gear generators, to obtain the tooth shape. The machine is built as a complete unit for rough and finish cutting of gears having a cone distance of 8¾ in. or less, ratios up to 10 to 1, and 3 D.P. or finer.

The machine is fully automatic. Twenty feeds are available, ranging from 14.2 sec. to 2 min. 5 sec. per tooth. Seventeen tool speeds are provided ranging from 42 to 333 strokes per minute.

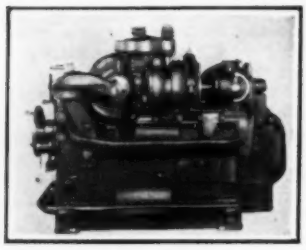
— 32 —

Gear Generator, No. 5-AC

Lees-Bradner Co., Cleveland, Ohio. [Vol.66,p.547]

As in the former 5-A model, a massive work slide traveling past the cutter head has been retained as a basic principle of design.

The machine is made in two sizes, 14 and 19-in. swing, and



each size is made in a standard and a heavy type. The standard machines have a capacity up to 4 D.P. and the heavy type up to 2½ D.P., in steel. By means of a high-speed cutterhead attachment, the machines can be adapted to cut gears of 12 D.P. and finer and also for worm milling.

Other attachments are a wormwheel mechanism to provide power infeed, with automatic stop, for hobbing wormwheels and a cam arrangement to provide a combination power infeed and crossfeed with automatic stop.

Power quick return to the workslide is also featured.

The cutter swivel head has been redesigned so that the hob can be adjusted up and down to micrometer measurements and its drive has been changed to arrange for reverse motion.

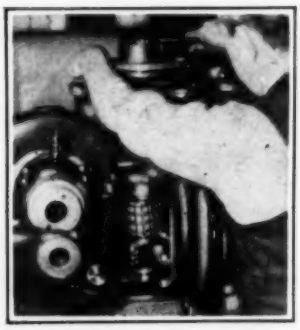
The work spindle is driven through a wormgear or a spur gear as required, either being instantly engaged, as necessitated by the speed of the spindle for the production of a wide range of work.

— 33 —

Gear Generator with Micrometer Hob Spindle

Lees-Bradner Co., Cleveland, Ohio. [Vol.66,p.916]

A micrometer adjustable hob spindle is now optional equipment on the No. 5 A.C. gear generator. With the improved swivel head the hob may be adjusted in thousandths of an inch. Clamps that hold the outer support of the hob arbor just below the hob are first released, after which the adjust-



ment may be made. The micrometer dial is located just below the flange of the adjusting handwheel.

Grinding Machines

— 34 —

Grinder, Face, Double-Spindle, No. 224

Badger Tool Co., Beloit, Wis. [Vol.66,p.711]

This double-spindle grinder is for use in grinding two opposite parallel surfaces. The machine carries two cylindrical wheels, 24 in. in diam., mounted in chucks and each wheel is driven by 20-hp. motor connected to the spindle through flexible, sliding couplings.

The worktable, on which suitable fixtures can be mounted,

reciprocates between the grinding wheels by means of a hydraulic system driven through a separate motor. Through the use of automatically-operated cams and valves, practically any desired motion of the table can be produced.

The grinding wheel heads automatically open and close in proper relation to the cross travel of the work table. On long cuts gradual infeed is provided and in all cases micrometer stop screws are used.

The spindle proper is a ground forging and is carried on tapered bronze bearings, automatically lubricated. The ends of both bearings are thoroughly sealed against leakage of oil and entrance of dirt.

A centralized lubricating system, employing a plunger pump, is also provided for all other bearings.

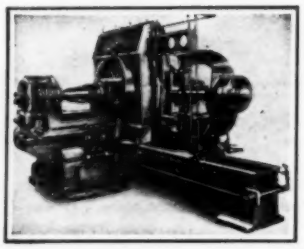
The entire machine occupies a space of approximately 14x6 ft. and weighs 20,000 lb.

— 35 —

Grinder, Face, Double-Head, Special No. 87

Gardner Machine Co., Beloit, Wis. [Vol.66,p.1032]

The No. 87 special double-head disk grinder is for finishing the opposite sides of large boiler sections. It is claimed



that this is one of the largest disk grinders ever built. It occupies a floor space of approximately 19x11 ft. and is 7½ ft. high. The disk wheels are 53 in. in diameter.

The work is carried on a special fixture equipped with air-operated clamps, and the whole is carried on a cross feed slide operated by an Oilgear hydraulic feed. A production of 24 sections per hr. is claimed.

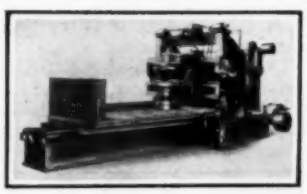
— 36 —

Grinder, Surface, Vertical

Springfield Manufacturing Co., Bridgeport, Conn. [Vol.66, p. 314]

This vertical surface grinder has a capacity for grinding work 10 ft. long, 4 ft. wide and 2 ft. high under the abrasive wheel.

The chief feature is the wheelhead, with a built-in Westinghouse a.c. motor of 30 hp., the rotor of which revolves on heavy-duty ball bearings. The upper ball bearing carries both radial and thrust loads and is mounted in a specially designed



cartridge to eliminate axial play. A ring wheel 18 in. in diam. is used.

Power for traversing the table is furnished by a 7½-hp. motor mounted between the uprights. This motor is also used for elevating the cross-rail and driving the coolant pump. A large coolant supply tank is located at the rear of the bed, where it is accessible.

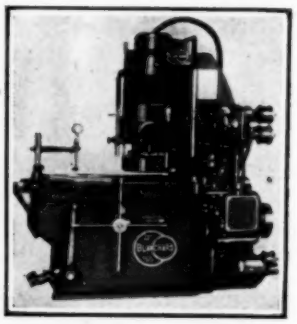
— 37 —

Grinder, Surface, No. 16, Improved

Blanchard Machine Co., 64 State St., Cambridge, Mass. [Vol.66,p.353]

The base of the improved No. 16 vertical surface grinder has a larger water capacity and a longer bearing on the floor, than former models, although the overall length is increased only 2 in. The improved base holds over 100 gal. of coolant as compared with 65 gal. in the old base.

The treadle shaft is housed in one end of the base. The other end of the base under the



column is carried straight down to the floor instead of being undercut.

The motor connections are inside the column where they are out of sight but accessible.

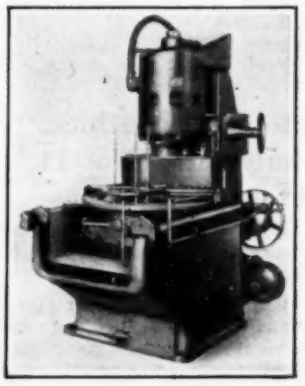
— 38 —

Surface Grinder, Special, for Asbestos Clutch Facings

Blanchard Machine Co., Cambridge, Mass. [Vol.66,p.1109]

The special grinder for asbestos clutch facings was built as a modification of the No. 16 high-power machine. The work is fed from a vertical magazine and is held down in contact with the table by presser feet. After coming from under the wheel the work is discharged from the table by an inclined shoe and guide.

The grinding is done in one



pass under the wheel and is performed dry, the waste material being removed by an exhaust system. Since the wear of the wheel is slight it is possible to use a simple hand feed.

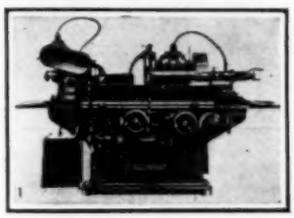
Two magazines are available for facings ranging from 3 to 12 in. in diam. With facings 10 in. in diam. and a removal of 0.015 in. of stock per side, the production is about 1,200 facings per hr. The work is parallel within 0.002 in. and is held to size within plus or minus the same amount.

— 39 —

Grinding Machine, Universal, Self-Contained

Cincinnati Grinders, Incorporated, Cincinnati, Ohio. [Vol. 66,p.235]

A line of self-contained universal grinders ranging size from 12x24 in. to 16x72 in. has been placed on the market. Individual electric-motor drive is furnished to the headstock, grinder spindle, and table-travel



mechanism, and centralized control is provided for all movements. These machines are practically identical in dimensions and range with the regular countershaft type.

The headstock is driven by a variable-speed d.c. motor mounted directly on the headstock and driving by means of a silent chain and worm.

The drive to the wheel spindle is furnished by a 5-hp. constant-speed motor through an endless belt. The drive to the speed change box for the work table traverse and to the coolant pump is by means of a 1-hp. constant-speed motor. While the headstock motor must invariably be of the d.c. type, the other two motors need not necessarily be so.

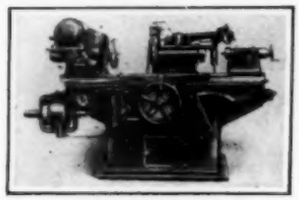
In cases where a 230-volt d.c. supply line is not available, machines can be furnished with a small d.c. generator.

— 40 —

Grinding Machine, Universal, Self-Contained

Landis Tool Co., Waynesboro, Pa. [Vol.66,p.1108]

A line of self-contained universal grinders ranging in size from 12x30 in. to 16x30 in. has



been developed. They have practically the same range and all of the features of the standard Landis countershaft-driven universal machines. Each machine is driven by three motors.

The headstock is driven by ½-hp. adjustable-speed motor for operation on direct current of either 115 or 230 volts. It is mounted directly on the headstock. The drive for the wheelhead is through a 3-hp. constant-speed motor, either a.c. or d.c., while the drive for the carriage power traverse and water pump is by a 2-hp. constant-speed motor through a 2-speed gear box.

Facilities are provided for mounting a d.c. generator on the rear of the machine where only alternating current is available.

The headstock is arranged for either live or dead spindle operation and is of the universal type. It can be swiveled to grind short tapers or for face grinding.

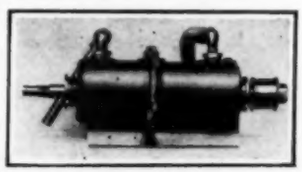
Regular equipment includes one 14-in. and one 12-in. grinding wheel with centers and fenders, wheel truing fixture, and internal grinding fixture.

— 41 —

Grinding Spindle, Internal, Water-Cooled, "Omco"

Oakmont Manufacturing Co., Oakmont, Delaware Co., Pa. [Vol.66,p.190]

The water-cooled wheelhead for use on the "Omco" internal grinder has a one-piece alloy-steel shaft that is ground to final size and dynamically bal-



anced. The bearings are bronze sleeves, tapered and split for adjustment.

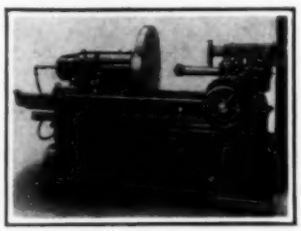
An oil reservoir is located between the bearings and the inside of the chamber is designed so that the shaft sends oil under pressure to the bearing feed lines. In order to maintain uniform viscosity, the oil chamber and both bearings are surrounded by a jacket through which the grinding coolant is pumped. Since a constant uniform film of oil is maintained bearing wear is reduced to a minimum. Because of adjustable end float, grinding to shoulders is simple. It is claimed that the finish produced is superior to that ordinarily attained in internal grinding.

— 42 —

Grinding Machine, Internal, Heavy-Duty, No. 28, "Hydroil"

Greenfield Tap & Die Corporation, Greenfield, Mass. [Vol.66,p.560]

This company has added to its line of heavy-duty "Hydroil" grinders an improved series of the No. 28 machine. They handle work with outside diameters of 36 and 48 in., respec-



tively, and will grind a hole 32⅛ in. in diam. with a wheel 10 in. in diameter.

Two styles of improved wheelheads are offered, a hollow-spindle type and a heavy-duty type. The former is of plain bearing construction and is provided with a large hollow spindle for the accommodation of long cylinders, sleeves, and the like. The heavy-duty type is completely equipped with ball bearings and is massive and rugged, for taking heavy pieces of large swing. The workhead swivels for taper grinding and can be used to face as well as to grind internally.

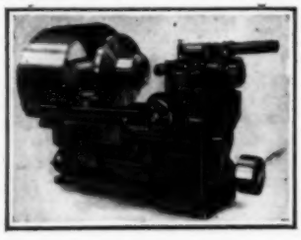
The features of hydraulic operation and control, self-contained drive, a single motor and the like, present in other "Hydroil" grinders, are retained.

— 43 —

Grinder, Internal, Heavy-Duty, "Hydroil," No. 28-C

Greenfield Tap & Die Corporation, Greenfield, Mass. [Vol. 66,p.756]

The No. 28-C machine swing works 48 in. in diam. and will grind a hole 32 in. in diam.,



using a wheel 10 in. in diam. The normal table travel is 42 inches.

The workhead is of the heavy-duty type and is operated by a belt from a drum in the base to a jackshaft and thence by silent chain to the work spindle. The head is mounted on ball bearings throughout.

The work table is reciprocated hydraulically by oil pressure, as in previous models, and all controls are centrally located. Ample protection from flying grit and water is furnished the machine. A large reinforced sheet-steel water guard is mounted on rollers and can be instantly run forward over the work.

The entire machine is run by a single 20-hp. motor driving either by belt or chain.

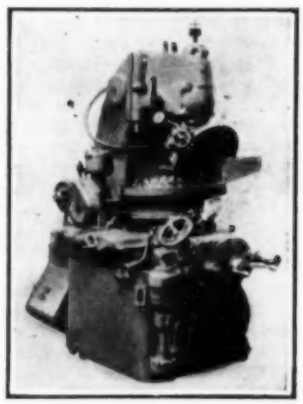
— 44 —

Cutter Sharpener, Automatic, 12-Inch, for Spiral Bevel Gears

Gleason Works, Rochester, N. Y. [Vol.66,p.233.]

The automatic wet grinder for bevel gear cutters is completely self contained, and power for driving the grinding wheel table, index and water pump is supplied by three separate motors.

The grinding is performed on the conical side of a wheel 14



in. in diam., which is carried on a ball-bearing spindle and is driven from a 3-hp. motor in the base. A ¼-hp., built-in type motor is used for operating the indexing mechanism and another motor of similar type is used is used to drive the coolant pump.

On this machine the cutters are first rough sharpened, and then a different part of the feed is engaged so that the cutter passes across the wheel and back only once for the finishing cut.

By grinding on the conical side of the wheel, line contact is obtained and unnecessary burning of the blade is avoided.

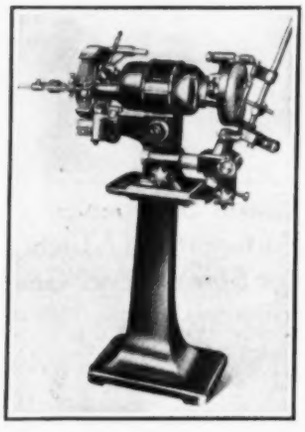
The cutter holder is adapted for three sizes of cutters, namely, 6, 9 and 12 in. in diam. The holder has a tilting cradle base for sharpening cutters of different blade angles.

— 45 —

Grinder, Tap and Drill, Combination, "Grand Rapids"

Gallmeyer & Livingston Co., Grand Rapids, Mich. [Vol.66, p.273]

This combination twist-drill and tap grinder is being made in four sizes with either belt or integral motor drive. The style 10-A machine has a capacity for grinding drills ranging



in size from No. 52 to ¾ in. and taps from No. 6 to 1⅛ in.; style 10-B handles drills from ⅛ to 1½ in. and taps from No. 6 to 1⅛ in.; style 20-B handles drills from ⅛ to 1½ in. and taps from ⅛ to 3 in.; while style 20-C has a drill capacity of ¼ to 2½ in. and a tap capacity of ⅛ to 3 in.

The tap-grinding device is used for grinding the taper at the end of the tap and the clearance back of the cutting edge thus formed. The convex clearance provided is in the form of an arc of a circle.

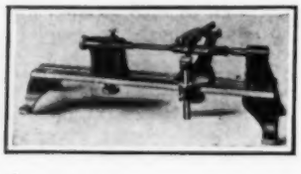
For electric drive, a repulsion-induction motor is built into the head of the machine. In the case of the belt-driven model, an overhead countershaft is supplied. All four models occupy a floor space of 2x3½ ft. The belt-driven models, Nos. 10-A and 10-B, weigh 385 lb. net, while the belt-driven models Nos. 20-B and 20-C weigh 400 lb. net.

— 46 —

Reamer Sharpener

Foster-Johnson Reamer Co., Elkhart, Ind. [Vol.66,p.599]

The hand reamer sharpener illustrated will handle all straight-bladed reamers, having centers in the ends, that are



not over 16 in. in length nor over 5 in. in diameter.

The tailstock center is backed by an adjustable spring. The reamer is prevented from rotating by a spring member that engages one of the reamer blades and thus furnishes a means of indexing.

The reamer blade is sharpened by means of a hone, the handle of which rests on a support adjusted so that the stone conforms to the angle of the reamer blade.

— 47 —

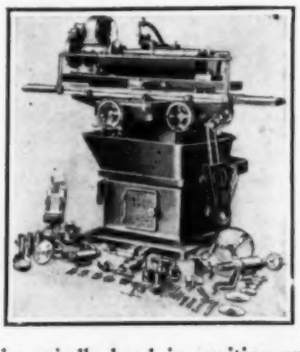
Grinder, Cutter and Tool, Universal, No. 5

Gallmeyer & Livingston Co., Grand Rapids, Mich. [Vol.66, p.637]

The No. 5 universal cutter and tool grinder can be arranged for either wet or dry grinding, and it is furnished either belt driven or with a 1½-hp. motor mounted in the base. Two spindle speeds are available. The headstock is driven by a built-in ¾-hp. motor.

The machine can be furnished with either hand or power longitudinal movement of the table. When power feed is furnished, four speeds are available ranging from 8 to 44 in. per min. Automatic positive reverse is provided so that shoulder work can be ground.

This heavy-duty tool grinder is rigidly constructed throughout. The casting carrying the grinding spindle swivels 90 deg. in either direction and has graduations to indicate the setting. The machine can be adjusted in either of two ways: by locking



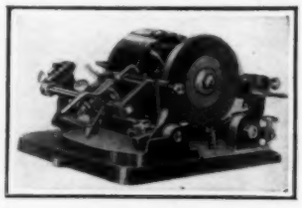
the spindle head in position on the central column and swiveling the sleeve and knee around it, or by leaving the sleeve locked in a fixed position and swiveling the head to the desired position. The spindle can be furnished with either ball bearings or bronze sleeve bearings. The machine can be operated from either side, and transverse, vertical and longitudinal movements are available in either position. From the front position a rapid action lever is available for longitudinal movement as well as a slower handwheel movement.

— 48 —

Grinder, Reamer and Tap

Wells Manufacturing Co., P.O. Box 613, Greenfield, Mass. [Vol.66,p.910]

This small, motor-driven grinder is for sharpening taps or reamers. It grinds the tools eccentrically according to a



patented method developed by this company. The right to use the patent on taps goes with each machine.

The motor can be connected to any electric light socket. The No. 1 machine takes taps up to ¾ in. and reamers from ⅛ to 1 inch.

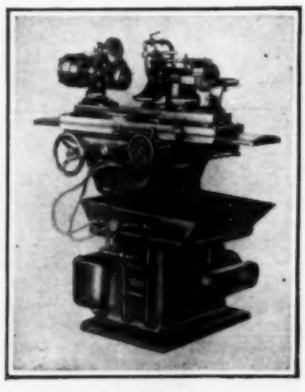
— 49 —

Grinders, Tool and Cutter, Self-Contained, Nos. 11 and 12

Landis Tool Co., Waynesboro, Pa. [Vol.66,p.915]

Individual motors are furnished for the main drive and the work drive. The No. 11 machine is for plain work only, while the No. 12 machine is for universal toolroom work.

The wheelspindle and traversing mechanism are driven by a 2-hp. motor while the headstock is driven by a ¾-hp. motor mounted in such a way that the



full universal features of the headstock are retained. It can be swiveled 180 deg. in either a vertical or horizontal plane.

The table is traversed hydraulically at speeds of 6 to 360 in. per min. Provision is made whereby the carriage will dwell at the reversal point to permit indexing the work; automatic reversal or hand reversal can also be provided.

These machines have a longitudinal movement of 7 in., a cross movement of 9 in. and a vertical movement of 10½ in. Work 10 in. in diam. and 20 in. long can be swung on centers and face-mills up to 18 in. in diam. can be ground without the use of raising blocks.

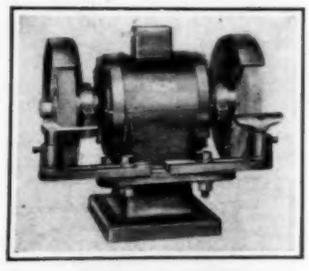
Complete equipment of fixtures, attachments and wheels can be furnished.

— 50 —

Grinder, Bench

Standard Electrical Tool Co., 1938 W. 8th St., Cincinnati, Ohio. [Vol.66,p.195]

This line of ball-bearing bench grinders in ¼, ½, 1- and 2-hp. sizes is for use on either a.c. or d.c., and each unit has integral motor drive. The armature shaft, mounted in



dust-proof ball bearings, is of nickel steel. The switch is located on top of the motor.

Wheel diameters range from 6 to 12 in. and adjustable arms for tool rests are available. These grinders are also manufactured in the pedestal type.

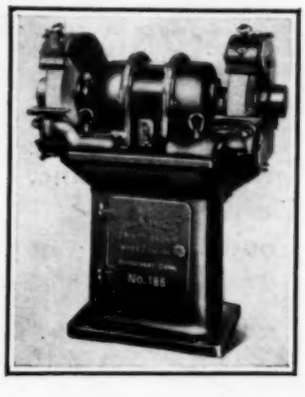
— 51 —

Grinders, Floor, Motor-Driven

Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. [Vol.66,p.236]

This line of three motor-driven floor grinders, Nos. 184, 185 and 186, is for general utility grinding operations under all kinds of adverse conditions.

The motors are built integral with the grinding spindles and



are of the squirrel-cage induction type. They conform with the A.I.E.E. specifications and will regularly take an overload of 25 per cent.

The spindles are mounted on ball bearings having individual lock nuts. The sizes have been conservatively selected in regard to load and speed capacity.

The wheel guards are made from steel plates and are fully adjustable. A nozzle is arranged at the rear for connection to an exhaust system. The equipment also includes an automatic starter having overload and undervoltage protection and push-button control.

— 52 —

Grinder and Buffer, Combination

Standard Electrical Tool Co., 1938 W. Eighth St., Cincinnati, Ohio. [Vol.66,p.238]

A line of combination grinders and buffers is being made in four sizes, with integral mo-

tors ranging from ½ to 3 hp. The machines can be supplied for use with either a.c. or d.c. circuits.

The shaft is made from high-grade nickel steel and is mounted upon three SKF ball bearings. The motor is controlled by a quick make-and-break switch located on top of the motor housing within easy reach of the operator.

— 53 —

Grinder, Floor Stand, Motor-Driven

Standard Electrical Tool Co., 1938 W. 8th St., Cincinnati, Ohio. [Vol.66,p.392]

Two motor-driven floor stand grinders of 3- and 5-hp., respectively, are being made.

The motor used is a General Electric 40 deg. type, and is controlled by push button. The armature shaft is made of nickel steel and is mounted upon SKF ball bearings.

The emery wheel guards are

of the hinge door type with exhaust connections. They are equipped with spark arresters and adjustable eye shields.

The 3-hp. grinder carries emery wheels 12 and 14 in. in diam., with a 2-in. face. The larger machine has emery wheels 18 in. in diam. by 3 in. face.

— 54 —

Grinding and Buffing Machines, Combination

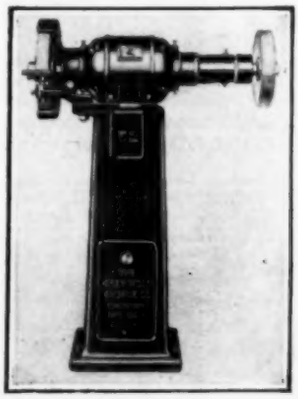
Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.66,p.673]

A line of motor-driven combination grinding and buffing machines has been developed in the floor or bench type. It can be equipped with incased-type spindle extensions with double ball bearing construction for heavy-duty buffing, polishing and scratch brush work or with open-type spindles for use with close-corner work.

For use with single-phase alternating current, the machines are equipped with improved commutating-type, repulsion-induction motors, while for use with two- and three-phase alternating current, the machines are equipped with motors of squirrel-cage type.

The bearings are completely enclosed and are provided with suitable oil reservoirs having drainage plugs.

Automatic motor starters with push-button control are standard equipment.



— 55 —

Grinding and Polishing Machine, Combination

Standard Electrical Tool Co., 1938 W. Eighth St., Cincinnati, Ohio. [Vol.66,p.957]

The heavy-duty combination grinding and polishing machine is being made in two sizes of 3 and 5 hp., respectively. The motor is equipped with push-button control.

The armature shaft is made of nickel steel and the bearings

are incased in dust-proof chambers. A shaft-locking device is provided for use in changing wheels.

The machine will take grinding, buffing and wire wheels for various uses.

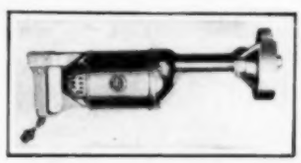
— 56 —

Grinder and Buffer, Hand, Motor-Driven

Cincinnati Electrical Tool Co., Cincinnati, Ohio. [Vol.66, p.958]

This universal hand grinder and buffer is designated as model NSU. The machine is equipped with a ¾-hp. motor and carries a 6x1-in. grinding wheel, revolving at a speed of 3,600 r.p.m. The tool is of full ball bearing construction. Both the bearings and the gears operate in grease.

Spiral gears, heat-treated and of ample size, are used throughout. An inclosed, patented switch is located in the handle with a push trigger. The wheel



guard is both longitudinally and radially adjustable.

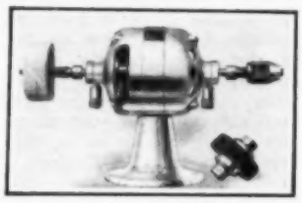
The weight of the tool is 24 lb., including wheel and wheel guard. The motor can be furnished wound for 32, 110 or 220 volts for either alternating or direct current.

— 57 —

Grinding & Polishing Heads

Goodell-Pratt Co., Greenfield, Mass. [Vol.66,p.1033]

Two small, high-speed motor-driven polishing and buffing heads have been added to this



company's line of electric tools. The machines are suitable for a wide variety of light polishing, grinding, buffing and drilling work.

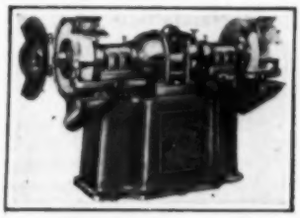
The motors are of the universal type for use on any 110-volt circuit. Machine No. 1,060, illustrated, develops about 1/30 hp., while machine No. 1,061 develops about 1/10 hp. Both heads have polished aluminum stands and housings. The spindles are equipped with a taper thread on one end and an interchangeable arbor and 3-jawed chuck of 5/32 in. capacity on the other. A grinding wheel and cloth buffing wheel are also supplied as regular equipment.

— 58 —

Grinder, Electrical, Heavy-Duty

Standard Electrical Tool Co., Cincinnati, Ohio. [Vol.66,p. 1113]

The heavy-duty electrically-driven grinder is made in three sizes of 5, 7½ and 10 hp. The 5-hp. grinder carries two wheels,



18 in. in diam. with 3-in. face, and weighs 1,920 lb. The 7½ hp. machine carries wheels 24 in. in diam. by 4 in. face and weighs 2,020 lb., while the 10 hp. grinder carries wheels 24 in. in diam. by 4¾ in. face and has a weight of 2,375 pounds.

The grinders are equipped with 40 deg. General Electric motors having push-button control. Four SKF deep groove ball bearings are used to support the nickel-steel spindle.

The emery wheel guards are of heavy construction and are of the hinge door type with exhaust connections.

— 59 —

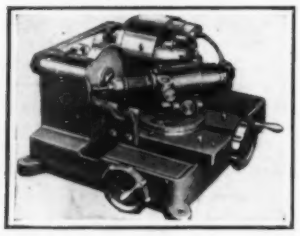
Valve Refacers, Type D and E, Van Norman

Van Dorn Electric Tool Co., Cleveland, Ohio. [Vol.66,p.954]

Two types of valve refacers are being manufactured by the Van Norman Machine Tool Co., Springfield, Mass., and are being distributed by the above company.

The Type D refacer will grind valves having stem diameters of ¼ to 7/16 in. and a head diameter of 4½ in. A V-block is permanently attached to this machine, making it possible to grind the ends of Ford valve stems or cam followers. The workhead and the wheelhead are driven by a ¼-hp. Westinghouse motor.

The Type E refacer may be used for grinding valves up to ⅝ in. stem diameter and 4½ in. head diameter. Valve reseating cutters and valve seat hones can also be ground, as well as valve



lifters, tappets, tappet screws, small spindle bolts, and the like.

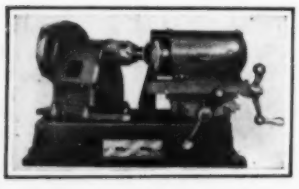
A 5-in. saucer wheel is used for side-wheel grinding. The wheelhead and workhead are driven by two independent motors.

— 60 —

Refacer, Valve, ½-Inch, Universal

Black & Decker Manufacturing Co., Towson, Md. [Vol. 66,p.1115]

The ½-in. universal valve refacer resembles the No. 45 valve refacer, described on page 889, Vol. 65, of the *American Machinist*, except that the work



head is mounted so that it can be set to any desired angle. There are sockets located at 30-, 45- and 60-deg. points into which a tapered plug drops in order to definitely locate the head when grinding at these particular angles.

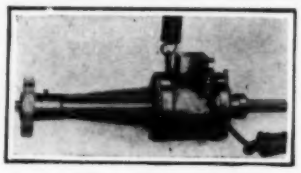
The machine will reface valves with stems up to ½ in. in diameter. Both motors are of the universal type and can be supplied for all normal voltages.

— 61 —

Grinder, Swing

Standard Electrical Tool Co., 1938 W. 8th St., Cincinnati, Ohio. [Vol.66,p.433]

The swing grinder shown is one of a line of five sizes. These grinders are especially adapted to surfacing rough castings and



cleaning castings of all descriptions. The machines may also be used with canvas wheels for polishing or hand buffing. They can be suspended from a traveler or counterbalanced on a pulley.

The armature shaft is made of nickel steel and is mounted upon three ball bearings inclosed in dust-proof housings. The motors are rated at ¼, ½, 1, 2 and 3 horsepower.

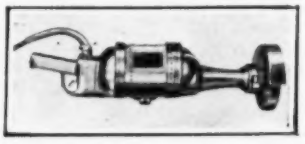
— 62 —

Grinder, Portable, Electric

Black & Decker Manufacturing Co., Towson, Md. [Vol. 66,p.1074]

Two sizes of portable electric grinders employing an improved form of internal gear drive are available.

It is said that this internal gear is of sturdy construction,



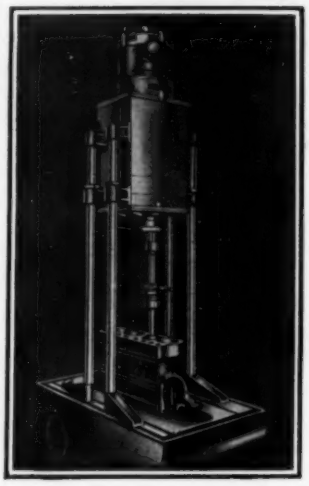
resulting in great strength and long wear, and that it is less subject to distortion from heat-treating. Smooth operation is also claimed. The wheel spindle is supported at each end by tapered roller bearings. The ventilation holes of the motor have been so placed as to protect the windings from grit.

— 63 —

Grinding Machine, Cylinder, Portable

Hutto Engineering Co., Detroit, Mich. [Vol.66,p.35]

The unit contains its own power plant and an adjustable stroking mechanism and can be



used for grinding a cylinder block in place in the chassis. The machine is fastened on top of a cylinder block by means of the head stud bolts.

The actual grinding part consists of a hardened steel body containing a full - floating, double - opposed cone assembly for the expansion and positive set of the six abrasive cutting units. With this tool it is possible to correct out-of-round or taper conditions or bad scores in worn cylinders. The walls are said to be left round and straight with a smooth satin finish.

The grinding assembly may also be driven by a ⅜-in. heavy-duty electric drill held and reciprocated by hand.

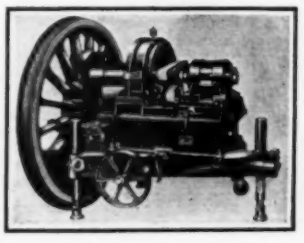
— 64 —

Grinder, Locomotive Crankpin, Portable

Micro Machine Co., Bettendorf, Ia. [Vol.66,p.350]

The portable grinder illustrated is used for truing out-of-round locomotive crankpins. With the standard spindle, the machine will grind crankpins ranging up to 10 in. in diam. and having bearing lengths up to and including 9¾ in. It will grind all single diameters of side-rod pins and both diameters of main pins up to a total length of 20 in. in one setting. The machine can be applied to driving wheels either under or out of the locomotive.

The grinding is accomplished by means of a series of abrasive wheels mounted on a ball-bearing spindle eccentrically mounted in a ring-type bearing which



revolves about the pin. The headstock has a longitudinal oscillating movement of ¾ in. to assure uniform wear of the grinding wheels. The machine is driven by a 7½-hp. motor.

The finished squaring pad on the end of the base is butted against the finished hub face of the driving wheel and anchored tightly by means of a threaded chain lashed around two spokes. The centering of the grinding circle to the pin is completed by moving the entire machine and by adjustment of the cross-slide.

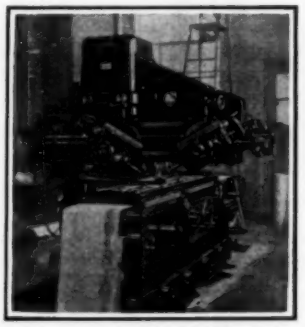
— 65 —

Grinding Machine, Way

L. Sichel, 200 Fifth Ave., New York, N. Y. [Vol.66,p. 352]

The way grinding machine illustrated is of German design, whereby the work is traversed past the grinding head.

The machine consists of a base with traversing table for supporting the parts to be ground, and a heavy, double-arm, radial standard of quadrangular form. One arm of the radial has two small universal wheelheads using saucer or cup wheels for finishing narrow flats, Vs, dovetails, sides and undersurfaces of ways. On the other arm of the radial is a



heavy - duty segmental - wheel surface grinder, intended for wide flats.

All grinding heads have built-in motors with the ball bearing spindles.

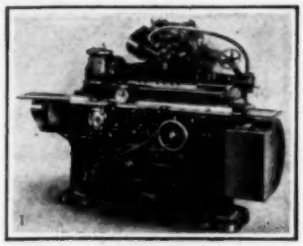
Reversal of the table is obtained by adjustable dogs, and a hand lever is also provided to throw the clutch out of engagement at any point of the stroke.

— 66 —

Grinding Machine, Worm, Automatic, No. 30

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.66,p.554]

This special universal machine for grinding worm threads is suitable for either soft or



hardened pieces and has a wide range. It will grind worms with threads of all sizes up to 1½ in. in depth, either right or left hand, with any practical number of threads and any lead and pressure angle. It swings worms up to 8 in. in diam., and the maximum length between centers is 24 in. One side of the thread is ground at a time, the worm being turned end for end to grind the opposite side of the thread.

A 5-hp. ball-bearing motor mounted on the wheelslide drives the wheelspindle through a belt, and a 3-hp. motor on the rear of the machine operates the remainder of the mechanism.

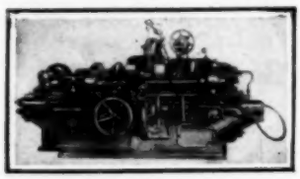
— 67 —

Grinding Machine, Crankpin

Landis Tool Co., Waynesboro, Pa. [Vol.66,p.549]

This crankpin grinding machine incorporates some improvements in design over the conventional machine, with the object of obtaining lower production cost. It is possible to grind crankpins in any plane without changing the set-up.

It is equipped with hydraulically operated clamps on the work-carrying fixtures, special indexing fixtures for obtaining proper angular relation between the pins, hydraulic power feed to the wheelhead, and a rotary hydraulic motor for traversing



the carriage to bring the various pins into the proper grinding position, together with a spacing device for locating the various pins. A special hydraulically operated work rest and a large-diameter grinding wheel, are also featured. The grinding wheel is fed in by hydraulic power and has rapid advance and slow feed movement against a positive stop.

A 20- or 25-hp. motor is used for the grinding-wheel drive. The wheelhead may also be driven from a lineshaft. In either case a 2-hp. motor is used for the workhead drive. The machine is built in two sizes: 16x32 in. and 16x42 inches.

— 68 —

Grinder, Slitter and Disk, No. 31-B

Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. [Vol.66,p.713]

The improved model 31-B slitter and disk grinder is arranged for integral motor drive. Work can be held in a universal chuck, on an expanding mandrel, fastened to a faceplate, or by a magnetic chuck.

The grinding wheel is mounted directly on the shaft of the driving motor. The wheelhead is mounted on a swivel slide, at right angle to the work slide, also adjustable. In this way

convex, concave, or flat faces can be ground to any angle. The workspindle is driven through a silent chain and gears by a ½-hp. a.c. motor mounted directly on the workhead. The workhead has a maximum swing of 16 inches.

The machine is arranged for grinding dry, but may also be used for wet grinding. It occupies a floor space of 42x42 in. and weighs about 1,250 pounds.

— 69 —

Grinder, Roll, 36-Inch

Farrel Foundry & Machine Co., Ansonia, Conn. [Vol.66, p.993]

The grinder is for the accurate grinding of rolls not over 36 in. in diam. A special crowning device is featured. It is controlled by means of a cam acting through lifting rods that raise and lower the back of the wheelhead, which is pivoted at its front end. Concaving can also be accomplished by a similar arrangement.

The grinding is performed by two wheels mounted on opposite sides of the roll in accordance with the swing rest prin-

ciple. Each grinding wheel is 20 in. in diam. with a 2-in. face and is driven by a 7½-hp. Westinghouse motor.

The driving head, which is direct-connected to a 25-hp. Westinghouse motor, is completely inclosed and is provided with flood lubrication. Automatic lubrication is also furnished to the ways and the feed screw as well as the head.

— 70 —

Grinder, Leaf-Spring

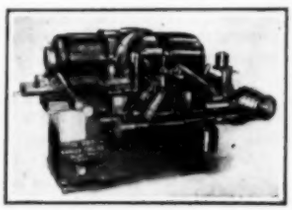
Badger Tool Co., Beloit, Wis. [Vol.66,p.1113]

The No. 221 double-face grinder has been modified for automatically grinding the eyes of leaf springs and bumpers. Each wheel spindle is driven by a 7½-hp. motor and carries in chucks cylinder grinding wheels. The work-carrying member consists of a ram actuated by a cam.

The cams are formed to give correct relation between actual grinding time and idling time. During the idling time the spring is turned about or a new spring is placed in the fixture. The spring eye is laid in a hardened V-block and two adjustable side arms align it.

In conjunction with the forward and reverse motion of the ram, the grinding wheelheads also automatically open and close under the control of two cams. The wheels gradually close down while one or more short passes are made, and when they have advanced up to stops the spring is drawn out to the idle period.

The main spindles of the machine are mounted in radial



and thrust ball bearings. All other moving shafts are carried in Timken roller bearings. The machine can be furnished with belt or motor drive and for either wet or dry grinding.

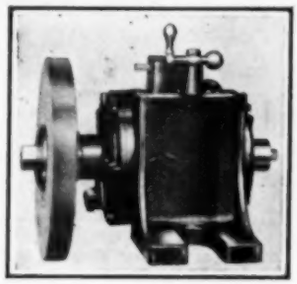
— 71 —

Grinder, Parallel, Angle-Plate

Standard Electrical Tool Co., 1938 W. 8th St., Cincinnati, Ohio. [Vol.66,p.349]

This angle-plate parallel grinder is especially adapted for roll grinding and general grinding on a lathe or for surface grinding on a planer or boring mill.

The grinding wheel is mounted



directly upon the armature shaft, which is made of nickel steel and is ground to size. The bearings are phosphor bronze and are easily adjustable for wear.

The grinder is manufactured in five sizes with ¼-, ½-, 1-, 2- and 3-hp. motors, respectively. The motor can be furnished for use with either a.c. or d.c. circuits.

— 72 —

Carrying Case for Dumore Portable Grinders

Wisconsin Electric Co., Racine, Wis. [Vol.66,p.395]

This company has designed steel carrying cases for the No. 2-AG and the No. 3 multi-speed

Dumore grinders. The No. 3 machine is illustrated.

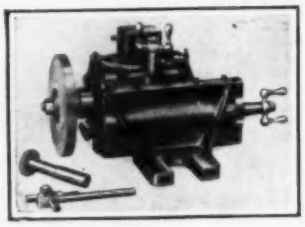
These cases have been designed to make the handling of these grinders easy, so that all the equipment will be in one place where it is available. The box will stand considerable abuse, and a handle on the top makes it readily portable.

— 73 —

Grinder Attachment

Standard Electrical Tool Co., Cincinnati, Ohio. [Vol.66,p.717]

The grinding attachment is for use on a lathe, milling machine or planer. The unit is made of three sizes: With a ¼-hp. motor carrying a wheel 8 in. in diam. by 1 in. face; a 1-hp. motor carrying a 10x1-in. wheel; and a 2-hp. motor carrying a 14x1½-in. wheel. It is provided with both vertical and horizontal feed motion. The



horizontal bracket can be made any length desired.

The bearings are made of high-grade phosphor bronze and are of split taper form to provide adjustment.

— 74 —

Grinding Wheels, Disk

Sterling Grinding Wheel Co., Abrasive Division of the Cleveland Stone Co., Tiffin, Ohio. [Vol.66,p.434]

This company has developed a full-dimension disk grinding stone to be sulphured direct to the plate.

Several claims are made for this type of grinder: Because the disk is thicker, it will last longer than the usual paper disk and when it does finally wear out a new one can be put on in about 20 minutes. Because the disk is sulphured in place, it is said that the delay of cleaning the plate is eliminated.

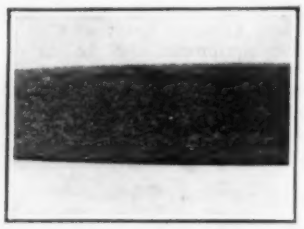
This sulphur bond is said to be very tight.

— 75 —

Grinding Wheel, Snagging, High-Speed

Norton Co., Worcester, Mass. [Vol.66,p.1115]

Bakelite is used as the bonding material and the snagging wheel is designed especially for operation up to a surface speed of 9,000 ft. per min. It is said



that the use of Bakelite results in a wheel with the open structure of a vitrified wheel, but one that can be operated with safety at high speed. The structure of the wheel can be seen in the accompanying photograph.

It is also claimed that the Bakelite bond is not affected by heat and that due to the high speed a considerable increase in production can be obtained.

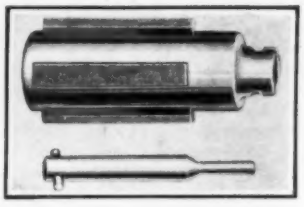
— 76 —

Burnishing Tool for Hydraulic Brakes

Hall Manufacturing Co., Toledo, Ohio. [Vol.66,p.233]

The burnishing tool is for removing the corrosion and sediment from the master and wheel cylinders of hydraulic brakes.

It is made in three sizes, with ranges of 1⅛ to 1⅞ in., 1⅛ to



1⅛ in., and 1⅞ to 2¼ in., respectively. The two smaller sizes are of the three-stone type, and the largest is of the four-stone type. The stones are actuated by individual springs from within the tools.

This tool may be satisfactorily used for burnishing, polishing and enlarging holes in cast iron, aluminum, bronze and hardened steel, besides its special use.

— 77 —

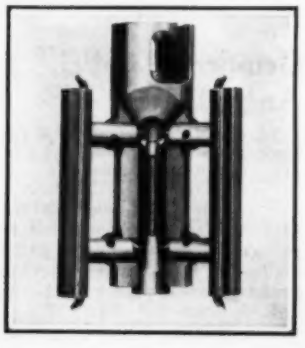
Hone, Cylinder, "Grisaco"

Grinder Sales Co., 526 W. Fort St., Detroit, Mich. [Vol. 66,p.232]

This cylinder hone uses one set of stones for all sizes of bores ranging from 2⅜ to 4⅛ in. in diam. Different sizes of bores are taken care of by screwing different length pins in the holders in which the stones are die cast. The stones are all 4 in. in length. Three-stone or six-stone hones can be supplied.

The conical pin ends bear against adjustable cones and a range adjustment of ¼ in. diam. is available. The stones are kept from falling out by means of coil springs slipped over the prongs at their ends.

The tool may be driven by any standard ⅜-in. portable electric drill.



— 78 —

Cylinder Hone, Model X

Hall Manufacturing Co., Toledo, Ohio. [Vol.66,p.275]

The model X cylinder hone combines both the positive-set type and spring-actuated type. Pressure may be changed from spring to solid or back again without removing the hone from the cylinder or the driving drill from the hone.

Precision ground hones apply equal pressure on all four stones. The main body of the machine is a die casting made from a nickel-base alloy.

It is recommended that a standard ⅜ in. portable electric drill be used to drive the hone, although a ¼ in. drill is said to be capable of driving it.

Lathes

— 79 —

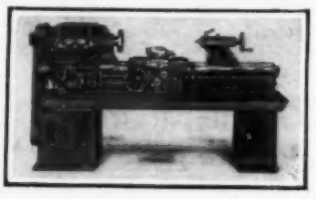
Lathes, Engine

Porter-McLeod Tool Works, Hatfield, Mass. [Vol.66,p.313]

This company has redesigned a line of lathes formerly manufactured by the Willard Machine Tool Co., Cincinnati, Ohio. The line will comprise 13-, 15-, 16-, 18-, 21- and 24-in. sizes.

The headstock is of box section which forms an oil reservoir in which the hardened steel gears are partly immersed. A constant-speed driving pulley is used, and twelve spindle speeds ranging from 15 to 500 r.p.m. are available in the 15 in. size.

The quick-change gear box provides for cutting forty different pitches of thread and an



equal number of feed changes.

The live spindle is of nickel steel and runs in adjustable phosphor-bronze bearings.

The apron is the double-wall type. Both cross and longitudinal feeds are effected through friction clutches and are reversible from the apron.

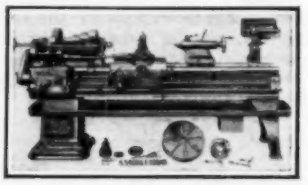
The threading and feeding movements interlock so that both cannot be engaged at once.

— 80 —

Lathe, Tool-Room, Precision, 16-Inch

Springfield Machine Tool Co., Southern Ave., Springfield, Ohio. [Vol.66,p.995]

The lathe is driven by a four-step cone pulley with a single back gear and a rapid change



gear device giving thirty-six changes of feeds. Either right- or left-hand threads can be turned, and automatic stops are provided in either direction.

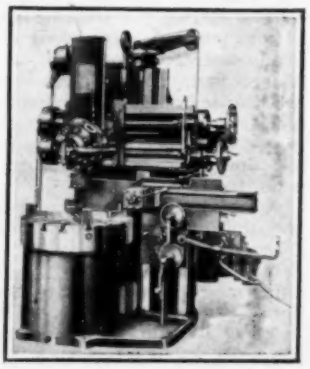
The machine is equipped with relieving attachment, taper attachment, draw-in collet attachment with a full set of collets, oil pan, tool cabinet and quick acting tailstock. In addition, there is furnished as regular equipment steady and follower rests, large and small faceplates, a double friction countershaft and all the necessary wrenches.

— 81 —

Lathes, Turret, Vertical, "Spiral Drive"

Bullard Machine Tool Co., Bridgeport, Conn. [Vol.66,p. 228]

This improved series of vertical turret lathes, known as the "Spiral Drive" type, supersedes



the previous "New Era" type. Improvements include changes in the material of construction, such as the all-steel main slide and turret. The turret locking mechanism has also been redesigned, and other changes have been made to increase the strength and efficiency.

The most important improvement is the adoption of spiral bevel gear drive to the table in order to obtain a smoother table action and more constant transmission of power. The gear is built in as an integral part of the table, spindle and chuck unit.

This spiral drive series includes the four sizes of this machine previously built, namely, the 24-, 36-, 42- and 54-in. sizes, and also a larger 64-in. size. The design of this size follows the same general line of the smaller sizes, but it provides a clear swing of work 66-in. in diam. and a clearance height of approximately 34-in. under the crossrail and 48-in. under the turret face.

Twelve table speeds are available, ranging from 2½ to 43 r.p.m. Both the main head and the side head are provided with eight positive and independent changes of feed.

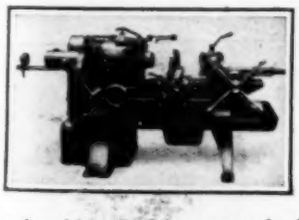
The 64-in. machine has a net weight of approximately 28,000 lb. and occupies a floor space of 10 ft., 6 in. square.

— 82 —

Lathe, Turret, Improved, No. 4

Warner & Swasey Co., Cleveland, Ohio. [Vol.66,p.513]

A six-speed all-geared head and a power-feed cross slide has been added to the No. 4 turret lathe. Previously this machine was made with a cone head and a twelve-speed all-geared head,



and with a plain screw-feed cross-slide. The machine has a bar capacity of 1¼x10 in. and will swing work in the chuck up to 8 in. in diameter.

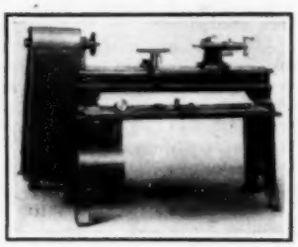
Six power cross feeds are provided, selected by means of levers mounted on the carriage apron. Longitudinal feed is obtained by means of a handwheel. A round tool post is provided on the front of the cross-slide carriage and a holder in the rear of the carriage is for use with a cutting-off tool. A plain screw feed cross slide can also be obtained, operated by a handwheel. The tool post equipment is the same as that furnished on the power feed cross-slide.

— 83 —

Lathe, Speed, Motor Driven, Improved

J. G. Blount Co., Everett, Mass. [Vol.66,p.393]

This motor-driven speed lathe has been redesigned to furnish greater ease of operation and maximum safety to the operator. The motor is mounted on



an adjustable motor plate within a cabinet-type headstock leg. A steel guard fully incloses the headstock end of the lathe.

Speed variation has been simplified by the addition of a belt shifting device by which, it is claimed, wear and slip of the belt are eliminated and jamming and inconvenience in operation are avoided.

The headstock has been redesigned and the lathe can now be furnished with a spindle running in either ring-oiling bronze bearings or heavy-duty deep-groove ball bearings. In other respects the design of the lathe remains the same.

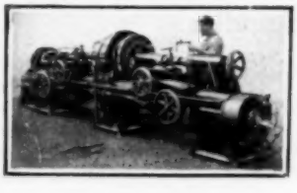
— 84 —

Lathe, Axle, No. 3, Improved

Niles Tool Works Co., Division of the Niles-Bement-Pond Co., Hamilton, Ohio. [Vol.66, p.718]

Two features have been added to the No. 3 double-axle lathe, and either or both of them are offered as optional to the standard equipment.

One improvement is an equalizing driving head in place of the regular driving plate and driver dogs. It consists of a driving spool upon which is mounted an internal gear ring, the outside of which is drilled with equally-spaced radial pin holes. Three serrated driving dogs are pivoted in these holes and the heel of each has a segment of a gear cut in it that meshes with the internal gear. Once the dogs come in contact



with the axle the pressure of the cut increases the grip and prevents any slip.

The second improved feature is a multiple toolholder which carries four tools so spaced and shaped as to perform simultaneous operations on the collar journal, dust guard, and wheel seat, respectively.

— 85 —

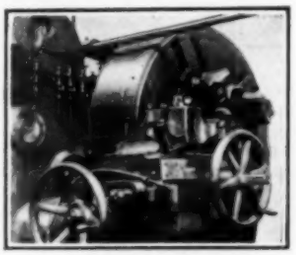
Lathe, Car-Wheel, No. 4, Improved

Niles Tool Works Co., Division of the Niles-Bement-Pond Co., Hamilton, Ohio. [Vol.66, p.955]

Improvements in turret toolpost construction and fully-automatic driver dogs are among the features recently incorporated in this 52-in. car-wheel lathe.

The turret is provided with a cam locking device instead of the removable wedge formerly used. All members of the toolrest are of cast steel, with the exception of the lower base piece, and all slides of the upper members are lined top and bottom with hardened and ground steel wearing plates.

The driver dogs have a simplified arrangement for radial



setting for different diameters of wheels. There are four to each faceplate.

The traverse speed of the right-hand head has been increased from 35 to 70 in. per minute. Other changes include an improved lubricating system.

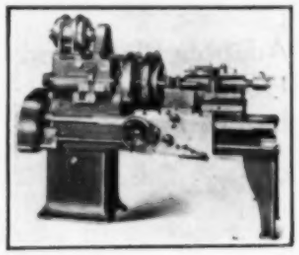
The lathe is regularly equipped to turn trailer wheels having a maximum diameter of 11¾ in. over the collars. To take care of the increased weight of trailer wheel sets, the channel and other members of the pneumatic hoist have been made with heavier sections.

— 86 —

Lathe, "Rapid Turning"

Bradford Machine Tool Co., 8th & Evans Sts., Cincinnati, Ohio. [Vol.66,p.950]

The "Rapid Turning" Lathe has been arranged for finishing brake drums. It has a capacity of work 22 in. in diam. over the ways. The carriage on its cutting trip is automatically stopped according to the length



of the work. A positive adjustable diameter stop on the carriage bridge is also provided as well as a quick hand return for the carriage. Power rapid traverse of the carriage can also be provided.

The pilot end of the work arbor comprises a ball bearing to take the thrust caused by the pressure of the heavy, square spring back of the tailstock spindle. The pressure can be suitably adjusted so as to firmly hold the work and yet not cause an undue end thrust. A separate sliding shoe permits the whole tailstock spindle to be moved without altering the setting.

When turning brake drums the guaranteed floor-to-floor time is 2 minutes.

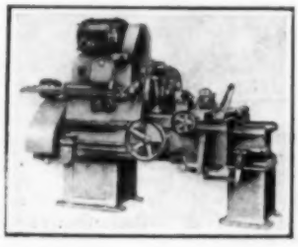
— 87 —

Lathe, Manufacturing, Special

Bradford Machine Tool Co., Eighth & Evans Sts., Cincinnati, Ohio. [Vol.66,p.1071]

The special manufacturing lathe has been arranged for turning and facing bell housing cases for an automotive manufacturer. It is semi-automatic in operation, and with a few changes in tooling and fixtures, can lend itself to a wide variety of work.

The bell housing is held in a special fixture on the nose of the spindle by a pneumatic clamping device. The machine cycle is as follows: The tool carriage is hand traversed against a fixed adjustable stop, and clamped. The rear and front set of cutting tools are then advanced toward the work



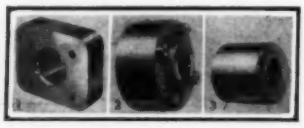
by means of a power-driven screw, until automatic power feed cutout functions. The operator then hand-feeds the tools to a positive diameter stop, after which simultaneous quick recession of both the cutting tools, as well as quick return of the tool carriage takes place. The finished bell housings may then be removed.

— 88 —

Adapter Plates and Hoods for Turret Lathes

Warner & Swasey Co., Cleveland, Ohio. [Vol.66,p.195]

The adapter plate shown in Fig. 1 (left) is for adapting any of this company's line of flanged tools to its universal hollow hexagon turret lathes. This adapter plate is tapped in such a manner as to make it



possible to hold the smaller tool flanges in the larger machines.

Both plain and adjustable adapter hoods are also available. They are made in standard sizes to screw on the spindle noses of the different machines and are threaded to fit all of the various adapters.

The adjustable-type hood shown in Fig. 2 (middle) is best fitted for very accurate work as it is possible to align the adapter and the work for concentricity.

For ordinary work the plain-type hood shown in Fig. 3 will be found satisfactory.

— 89 —

Box Chuck and Adjustable Chuck Backstops

Warner & Swasey Co., Cleveland Ohio. [Vol.66,p.237]

The box chuck shown is for holding work of awkward shapes, where rigidity and accuracy are required. It has a double-ended screw of coarse pitch for quick opening.

The master jaws are made from forgings fitted with bronze

bushings and are deeply anchored in the box-chuck body. Adapters are provided for holding the work jaws. These are furnished in either the blank or dovetail type.

The adjustable chuck backstops, not shown, furnish a convenient means for locating endwise work in the chuck. The ends of the screws are left soft so that for very accurate work a cut may be taken in the end of the screws. To locate the screws on varying radii the backstops may be swiveled on the chuck face.

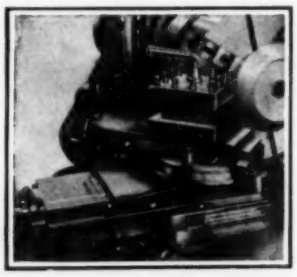
— 90 —

Turret Lathe Attachment, Compound Slide

Gisholt Machine Co., Madison, Wis. [Vol.66,p.353]

This compound slide with power angular feed is for use with the Nos. 3L, 4L, and 5L geared-head turret lathes made by this company. The slides are particularly useful for the manufacturers of bevel gears or other steep taper work. The attachment is arranged to give power feed to cutting tools in any horizontal direction. The upper slide has 6 in. of travel on the No. 3L, and 9 in. of travel on the 4L and 5L turret lathes.

The compound feed and the cross feed can be operated either by power or by hand and are independent, but interlocked



to prevent simultaneous engagement. The number and range of speeds are the same as the longitudinal feeds of the side carriage. Graduated index dials are placed on the screws for regulating the depth of feed.

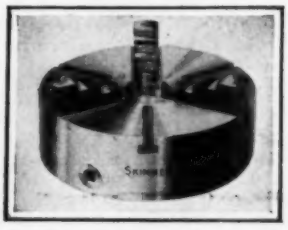
— 91 —

Chuck, Scroll, Heavy-Duty

Skinner Chuck Co., New Britain, Conn. [Vol.66,p.1034]

This extra-heavy, three-jawed universal scroll chuck shown is now marketed as standard equipment. It has a back recessed for the usual type of attachment plate instead of a special back with attaching collar integral.

In addition to making the body entirely of steel, the screws that hold the component parts together have been increased both in number and in size. This chuck is now available in 12, 15, 18, 20 and 22-in. sizes.



Milling Machines

— 92 —

Milling Machine, Rigidmill, No. 5

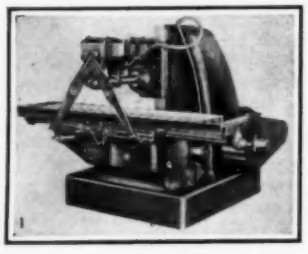
Sundstrand Machine Tool Co., Rockford, Ill. [Vol.66,p. 227]

This large-size No. 5 Rigidmill is identical in principle to the small Rigidmill made by this company.

On this machine, as in the smaller model, the column, base and saddle are made in one integral casting, to give a solid work support. The table height is 32 in. fro mthe floor.

The spindle head has a vertical adjustment of 13 in., and the distance from table top to spindle center varies from 3 to 16 in. The spindle is mounted in a steel quill and has micrometer horizontal adjustment for a distance of 4 in. It is equipped with a solid, rectangular steel overarm.

The entire drive up to and including the main spindle gear is mounted on Timken roller



bearings. The final drive is through a spiral-bevel pinion and in addition a flywheel is mounted on the spindle shaft to eliminate chatter from the cutter and to smooth out the drive. Pick-off gears provide a range of spindle speeds from 70 to 180 r.p.m. All shafts and gears are made of alloy steel, hardened and ground.

The table is provided with power feed and rapid traverse in either direction. The maximum feed range is from ¾ to 38 in. per min. The standard length of feed on the table can be supplied at 42, 48 and 60 in. with the standard bed.

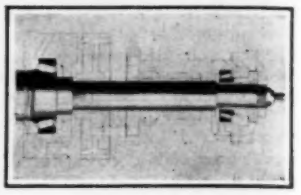
The machine can be driven from a constant-speed pulley or by a 10- to 20-hp. motor, driving through either a belt or a chain.

— 93 —

Milling Machine with Roller Bearing Spindles

Kearney & Trecker Corporation, Milwaukee, Wis. [Vol.66, p.391]

This company is now regularly furnishing ten models of its larger size Milwaukee mill-



ing machines, with the main spindles mounted on Timken tapered roller bearings. Timken bearings in the gear train leading up to the spindle have been retained as in previous models.

The inner race of the front bearing, which is the largest of the two, is pressed directly upon the spindle, while the inner race of the rear bearing is pressed on a long sleeve which is keyed to the spindle, but is free to slide endwise for adjustment. Both outer races are pressed into the column casting.

Initial thrust load is placed on the bearings in order to insure the spindle operating without further adjustment for a long period. The bearings are especially selected with a minimum of eccentricity.

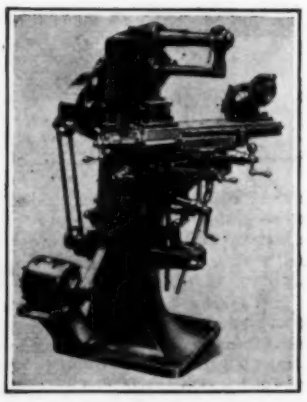
— 94 —

Milling Machine, Universal, No. 0

Artisan Manufacturing Co. 864 Hathaway St., Cincinnati, Ohio. [Vol.66,p.555]

This small No. 0 universal milling machine incorporates several novel features for a machine of its size. It has a table travel of 14 in., a cross travel of 5 in., and a knee elevation of 11 inches.

The machine can be driven by a cone pulley from a lineshaft



or from a ½-hp. motor mounted on a bracket bolted to the column base.

Six spindle speeds of 21, 39½, 74½, 141, 266 and 500 r.p.m. are available. The spindle is reamed for a No. 9 B & S taper and the spindle nose is threaded with 8 U.S.S. threads per in., 2¼ in. in diameter. Six feeds

ranging from 0.00075 to 0.024 in. per rev. can be had in either direction.

The table has a working surface of 6x18 in. and may be swiveled to a 45-deg. angle. The table-feed screw is arranged to receive change-gears for driving a dividing head for spiral milling.

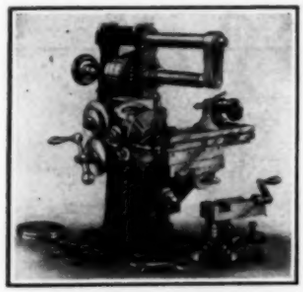
The machine without the motor weighs 650 pounds.

— 95 —

Milling Machine, Bench, Spiral

Stark Tool Co., Waltham, Mass. [Vol.66,p.912]

This bench milling machine has a spiral-index head and swivel table. It will accurately cut spiral, spur and bevel gears, twist-drills and tap flutes, and perform many similar jobs of



tool making. A vertical milling attachment can also be applied.

The swivel table is accurately graduated and may be swung 45 deg. in either direction. The working surface is 18x4 in. Work up to 5 in. in diam. and 7½ in. in length may be swung between centers.

With the three index plates, all divisions to 50 and all even divisions to 100, may be obtained. The index table furnished gives all divisions obtainable to 312. A wide range of spirals may be cut by the use of the eleven change gears provided.

The net weight is 285 lb. and the space required is 28x24 inches.

— 96 —

Milling Machine, Planer Type, "Hypro"

Cincinnati Planer Co., Cincinnati, Ohio. [Vol.66,p.189]

For this planer-type milling machine a table of box-like construction has been adopted. To prevent the table from lifting, a table clamp and an inner guide have also been supplied. Work may be clamped over the full length of the table. The bed of the machine is twice the length of the table, thus eliminating overhang.

The driving motor for the

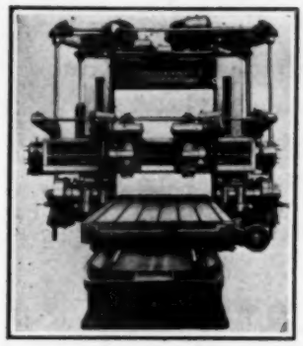


table is a reversible, 4-to-1 variable-speed motor. Through a back gear, thirty operating speeds are available. The range of the machine illustrated is 2 to 16 in. of table travel per min. and the table return is at the rate of 25 ft. per minute.

Four independent heads are supplied on the machine, and it is possible to move one or all at rapid traverse at the same time, or one can be fed while the other is being rapid traversed. Two independent speeds are provided for all the heads. There are two 15-hp. motors mounted on top of the machine, one of which drives the spindles of the two railheads and the other drives the spindles at the two side heads. Ball or roller bearings are used throughout the machine. Another motor is used to move the rail and operate the rapid traverse of the heads.

The three motors furnished with the machine are controlled from one board. Each motor is supplied with a 3-button switch. It is impossible to feed the table in any direction unless the spindles are revolving.

— 97 —

Miller, Cotter and Keyseat, No. 3

Niles Tool Works Co., Division of the Niles-Bement Pond Co., Hamilton, Ohio. [Vol. 66,p.911]

The miller shown is for finishing cotter ways and keyseats in locomotive crossheads, piston rods, and axles. The machine can also be adapted for general

work including small work because of the higher spindle speeds obtainable.

The machine has a capacity to mill splines up to 36 in. long by 2½ in. wide by 16 in. deep, and the chuck jaws will grasp work up to 12 in. in diameter.

The carriage has reversible longitudinal traverse on the bed with four different rates of feed. The two spindle heads mounted on the carriage also have adjustment transversely with automatic feed in an inward direction. The spindle heads may be used independently or in unison where opposite keyways are to be cut.

The machine may be driven by belt, by a variable-speed d.c. motor, or by a constant-speed a.c. motor in conjunction with a 4-speed gear box.

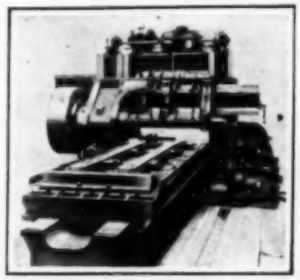
— 98 —

Milling Machine, Rod, Extra-Heavy, 58-Inch, Bement

Niles Tool Works Co., Division of the Niles-Bement-Pond Co., Hamilton, Ohio. [Vol.66, p.949]

This rod miller has a capacity of 58 in. between the housings and a table 16 ft. long by 54 in. wide, so that six connecting rods can be handled on edge or two flat for slabbing or channeling operations.

The improvements include a cross-rail down-feed, independent of the table feed. The cross-rail is made in the form of an L-shaped casting, and carries at its left-hand end the



cutter spindle and quill, as well as the large worm-gear drive box. The cutters are driven by a 75-hp. motor.

The cross-rail is suspended by two heavy screws on ball thrust bearings. The rail has rapid vertical movement by power and a wide range of automatic feeds, as well as hand feed.

The table feed and traverse mechanism is operated by a 10-hp. motor driving through a spiral gear and rack under the table, while the cross-rail speed and traverse are obtained from a 5-hp. motor on the crosstie. Feeds up to 3 in. per min. and rapid traverse up to 16 in. per min. are available.

— 99 —

Milling Attachment for Drill Presses, "Hawkins"

John W. Chapman & Co., Warsaw, Ind. [Vol.66,p.315]

The Hawkins milling attachment for drill presses can be equipped to do turning, in addition to regular milling operations, by mounting a 3-jaw

chuck on the spindle and fitting the table with a special toolholder. It can also be used as a cutting-off machine for bar stock and for light drilling, boring and reaming operations. The machine is capable of performing precision work.

Two types of the machine are built at present, the plain type illustrated and a semi-universal type. Either can be successfully operated on any upright floor drill press 16-in. or larger. Since the net weight is about 140 lb., it can be moved about.

Planers and Shapers

— 100 —

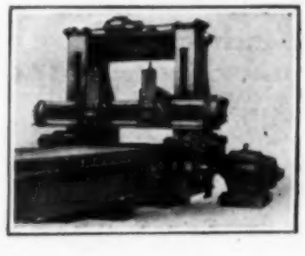
Planers, Large Size, Duo Control

Cincinnati Planer Co., Cincinnati, Ohio. [Vol.66,p.575]

There is a duplicate set of levers on the left-hand side of this large size planer so that it is possible to operate the machine from either side.

The movements of the down slides on the rail heads are independent of each other, but the gears are always in engagement and two feed rods are provided on the rail.

The machines also embody an improved support to the harp. There is a radius cast on the



top of the saddle and the harp is held to this by means of a clamp. The leverage is thus increased and greater rigidity furnished the slide when it is below the bottom of the rail.

— 101 —

Planers, Crank

Cleveland Planer Co., 3148 Superior Ave. N.E., Cleveland, Ohio. [Vol.66,p.237]

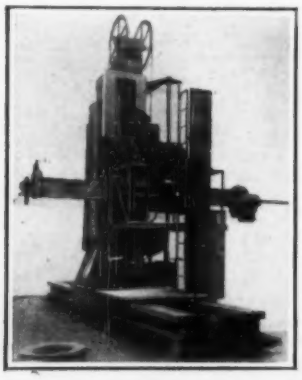
This company has taken over the manufacture of the Woodward crank planers formerly built by Woodward and Powell Co., Worcester, Mass. The machines will be made in the 24- and 36-in. sizes only. Repair parts as well as new machines will be supplied.

— 102 —

Planer, Draw-Cut, Traveling-Head, 84-Inch

Morton Manufacturing Co., Muskegon Heights, Mich. [Vol. 66,p.959]

This 84-in. stroke draw-cut, traveling-head planer is for planing, boring, milling and slotting heavy iron and steel castings and for all heavy-duty repair work. It may be equipped with floor plates, work



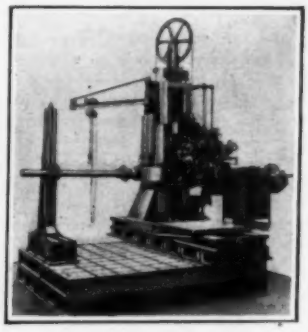
table, milling attachment, right-angle boring attachment, standard and traveling-head boring bars with outer support, reversible head for either push or pull cut, push and pull slotter bars and other equipment.

— 103 —

Planer, Traveling-Head, Draw Cut, 60-inch stroke

Morton Manufacturing Co., Muskegon Heights, Mich. [Vol. 66,p.1115]

This draw cut planer has a horizontal travel of 9 ft. on the base, a vertical travel of 5 ft. on the column, and 5 ft. on the cutting stroke. It is equip-



ped with reversing motor drive, and can be furnished with any length of bed or height of column and either with or without boring, milling, and drilling attachments.

The bottom of the bed is planed so that the machine can be used either as a stationary or portable machine.

The milling and boring feeds are automatic and can be easily and rapidly changed. The feed gear box has eight changes in each direction. A hollow steel arbor passes through the ram and is bored for receiving taper milling cutters, boring bars and other special equipment.

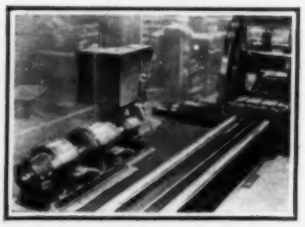
These traveling head planers are said to be especially adapted for the complete machining of large castings where a number of operations must be performed upon them.

— 104 —

Planer Drive, Electric "Ultra-Speed"

Allis-Chalmers Manufacturing Co., Milwaukee, Wis. [Vol. 66,p.1031]

A number of unusual features are claimed for the "Ultra-Speed" planer drive among which are: A much greater range of speed than heretofore



obtained, namely, 10 to 85 ft. per min. cutting speed with full torque available and 50 or more intermediate cutting speeds; a return speed of 180 ft. per min.; automatic operation with improved type of pendent control; complete safety to operator, planer and work; extreme overload capacity and adaptability to operate on either direct or alternating current.

Increased smoothness in acceleration and reversal and less wear and tear on the equipment are also claimed. The planer motor is of special design and the rotating parts are dynamically balanced.

— 105 —

Shaper, Draw-Cut, Heavy-Duty, Railroad, with Attachments

Morton Manufacturing Co., Muskegon Heights, Mich. [Vol. 66,p.551]

This special, heavy - duty, draw-cut shaper for railroad work has ample power for taking production cuts. It has a cutting stroke of 36 in., horizontal feed of 36 in., and vertical feed of 21 in.

The machine takes various attachments, namely, a shell or

crown-brass planing attachment, a shoe and wedge attachment, a rod brass attachment, and a special chuck for holding driving boxes while machining the shoe-wedge fit.

The rod brass attachment is designed to hold rod brasses while the strap fit is machined. With the chucking arrangement used, it is unnecessary to sweat the halves together before machining. The attachment will also operate on a 45-deg. angle, thus permitting the corners of the brasses to be machined without an extra set-up.

With the special chuck for holding the driving box while machining the shoe and wedge fit, it is possible to cut dovetail angular slots by shifting the bracket and the box on the large table to the desired angle.

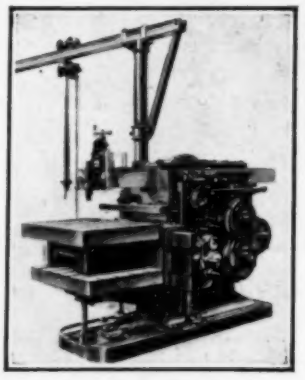
— 106 —

Shaper, Draw-Cut, Heavy-Duty, 36-Inch Stroke

Morton Manufacturing Co., Muskegon Heights, Mich. [Vol. 66,p.958]

The heavy-duty draw-cut shaper has a cutting stroke of 36 in., a vertical feed of 21 in. and a horizontal feed of 48 in. on the crossrail. All feeds are automatic and can be changed while the machine is in operation.

The clutches and other important parts of the shaper are



automatically oiled and all bearings are of bronze. The machine can be furnished for either belt or motor drive. All machines are equipped with an auxiliary table, a large T-slotted table, swivel base vise, jib crane with two-speed hoist, and a set of O. K. tools.

Presses

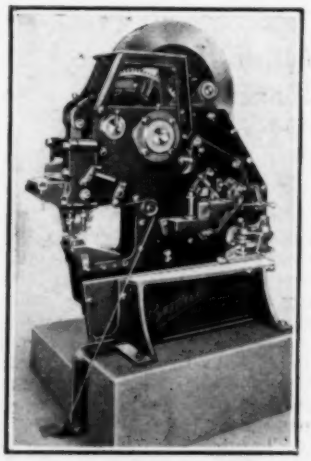
— 107 —

Iron Worker, Universal, No. 0

Buffalo Forge Co., 490 Broadway, Buffalo, N. Y. [Vol. 66,p.274]

This machine operates on the same principle as the larger Nos. ½ and 1½ Iron Workers, but some simplifications, made possible by the smaller capacity, have been introduced. The speed has been increased to 35 strokes per min., making the machine particularly adapted for working light stock.

A special rolled-steel frame is used for lightness and



strength. The shear blades, made of crucible steel, have four interchangeable cutting edges. Five-piece bar cutter knives are supplied to make sharpening and replacement easy. Knives can be furnished for special shapes. Optional equipment includes a triple punching attachment and a notcher.

The depth of the throat is 10 in. The equipment regularly furnished with the machine includes ⅜- ond ¾-in. round punches, a ¾-in. straight die, a ⅜-in. bevel die, shear blades for flats and plates, and bar cutter knives for rounds, squares, T's and angles.

The pulley-driven model weighs 2,200 pounds. The weight of the motor-driven model is 2,300 pounds.

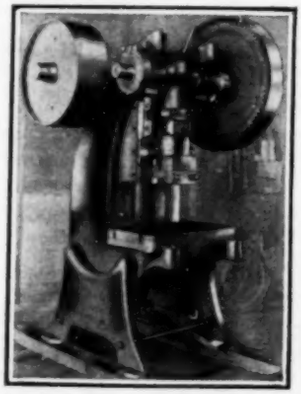
— 108 —

Presses, Inclinable, Geared, Nos. 4 and 5

Federal Press Co., Elkhart, Ind. [Vol.66,p.574]

Two sizes of geared presses have been added to the line of open-back, inclinable presses made by this company.

These geared presses are built in either plain geared or combination geared types. To



change them to the latter, it is only necessary to attach a belt rim. The press may then be operated as a flywheel type.

The gearing ratios are respectively, 5 to 1 and 5½ to 1, and the ram strokes are 48 and 47 strokes per min. The pressure exerted at the ram on the No. 4 machine is 42 tons, and that of the No. 5 machine 54 tons.

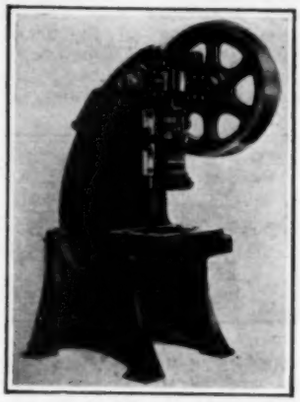
In other respects the design is the same as the flywheel-type machines, which have been on the market for some time.

— 109 —

Inclinable Presses

Marshalltown Manufacturing Co., Marshalltown, Ia. [Vol. 66,p.714]

This company has developed a line of inclinable power presses in sizes Nos. 1 to 5,



inclusive, in both plain and geared models. The presses resemble the standard line put out by this company.

A wrist-pin connection is used in the crank joint, and it is said to have a large pressure area and to be snug and tight at all times. The die space of the machine is large, permitting the use of leader-pin die sets and sub-dies. The bar knockout in the slide is of rugged construction and the clutch is simple and dependable. All parts are of generous size to insure long life.

— 110 —

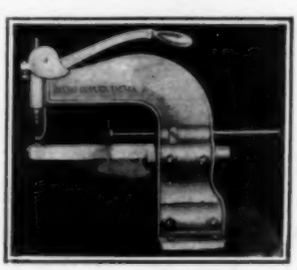
Punch, Hand-Power Duplex No. 18

Hydro Manufacturing Co., 350 W. 13th St., New York, N. Y. [Vol.66,p.718]

The No. 18 duplex metal punch was recently redesigned to punch 14-gage steel or lighter. It can also be used for inserting eyelets, slip rings and other hollow work.

The machine will punch any round hole up to ⅜ in. diam. in 14-gage steel, ⅝ in. in 16-gage, ¾ in. in 18-gage, and 1⅛ in. in 20-gage. Stock sizes of punches and dies are furnished in 19 sizes. Irregular shapes can be punched with special punches made to specifications.

In the illustration the punch is shown with the arbor placed in the upper opening in the frame for punching flat work



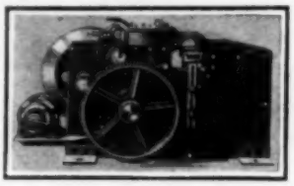
up to 20 in. in diam. When the arbor is inserted in the lower opening the punch will accommodate deep pans, channels and other irregular shapes such as lighting fixtures of various kinds.

— 111 —

Punch, Horizontal "Armor Plate"

Buffalo Forge Co., Buffalo, N. Y. [Vol.66,p.996]

The "Armor Plate" horizontal punch shown is designed particularly for punching flanged pieces, boiler heads, curved angles, beams, channels and other shapes that cannot be handled to advantage by a ver-



tical machine. The jaws are shaped to allow punching close to corners.

The semi-floating punch head permits lowering the punch for the accurate locating of centers. The punch itself is actuated through a cast-steel rocker arm mounted on a bronze-bushed kingpin. All parts subject to wear are adjustable. The gears are cut from steel and all bearings are bronze bushed.

The frame is made up of two heavy Armor-Plate steel sheets. The standard machines are equipped with short throats but larger ones can be specified. The machine is built in four sizes.

— 112 —

Press and Straightening Machine, 3-Ton

General Manufacturing Co., Detroit, Mich. [Vol.66,p.36]

The 3-ton flexible power press illustrated is similar to the 8 and 20-ton, 3-post machines

made by this company. Pressure is applied through a screw jack, the nut of which is allowed to revolve free until a friction brake band is brought against it. The power on the ram is in direct proportion to the pressure applied on the brake. The ram can be stopped at any point and it returns to its up position as soon as the foot pedal is released.

The stroke of the ram is normally 8 in., but machines with 9 and 12-in. strokes and special openings can be furnished. The table is 15 in. wide and the normal distance from the table to the end of the ram is 12 in. The table is provided with a ⅝-in. T-slot.

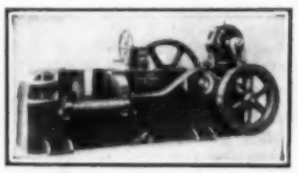
Straightening fixtures can be furnished with the machine so that work can be straightened and tested on centers. The head of the machine is a complete unit that can also be used to advantage with special fixtures.

— 113 —

Presses, Bending and Straightening, Horizontal

Williams, White & Co., Moline, Ill. [Vol.66,p.954]

The No. 2-A bender has a capacity for bending 130-lb. rails or 15-in. I-beams in a horizontal plane, or 24-in. I-beams in a vertical plane. The sta-



tionary jaw face measures 16x50 in., while the jaw opening is 30½ in. The ram face is 11¼ in. square and has a stroke of 1¾ in. It has a range of adjustment of 8½ in. and 10 hp. is required to drive the machine.

The No. 2-P bender, illustrated, has a capacity for bending 110-lb. rails. Its stationary jaw face measures 16x45 in. and the jaw opening is 24½ in. The slide face, stroke and total adjustment are the same as for the No. 2-A machine, and 7½ hp. is required to drive it.

These machines can be arranged either for direct belt or direct geared motor drive either with or without clutch control.

— 114 —

Bulldozer, 100-Ton

American Broach & Machine Co., Ann Arbor, Mich. [Vol. 66,p.1072]

The 100-ton hydraulic horizontal press, otherwise known as a Bulldozer, is driven by an oil pump, producing a maximum

pressure of 1,000 lb. per sq. in. The pump is driven by a 7½-hp. motor and the normal operating speed of the pressure stroke is

18 in. and the return stroke, 36 in per minute.

The jaws are 36 in. wide and 11½ in. high. The stroke of the sliding jaw is 18 in. The minimum distance between opening of jaws is 32 in., and the maximum 50 in. The sliding jaw is fitted with two T-slots.

— 115 —

Hydraulic Press, Laboratory

Fred S. Carver, 90 West St., New York, N. Y. [Vol.66,p.757]

The laboratory hydraulic press was developed for various kinds of tests on a small scale.

Hydraulic pressure is supplied through a small hand-operated pump and pressure up to 10 tons can be obtained on the platen. The platen measures 6x6 in. and the opening is adjustable by hand from 0 to 16 in. with 7½ in. between columns.

The press is equipped with a direct reading gage which shows both the total load as well as the hydraulic pressure.

The press occupies a space of 16x15½ in., and is 36 in. high. Its weight is 115 pounds.

Threading Machines

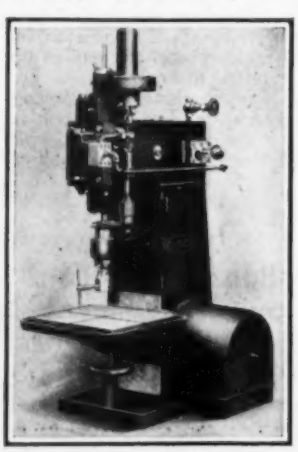
— 116 —

Tapping Machine, Automatic

Cisco Machine Tool Co., Cincinnati, Ohio. [Vol.66,p.229]

This automatic tapping machine is built in two sizes. The smaller machine, illustrated, has a capacity for taps up to ½ in. in diam. in steel, while the larger machine has a capacity up to ⅝-in. taps.

The operation of the machine is fully automatic; the tap is fed into the work to a predetermined depth, reversed, and is backed to the starting point. Suitable mechanism can be applied to the machine for the mechanical handling of the work by means of a magazine, revolving table or conveyor.



The machine is built in a bench type only and with a single spindle. A multiple-spindle machine can be furnished special.

A ½-hp. motor is regularly furnished for the drive. It is mounted in the base of the machine, and delivers its power through cone clutches mounted on ball bearings. The clutches are controlled by air pressure.

The table has a working surface of 11½ in. square and is furnished with two T-slots. The maximum distance from the table to the chuck is 6 in. The weight of the machine is 415 lb. net.

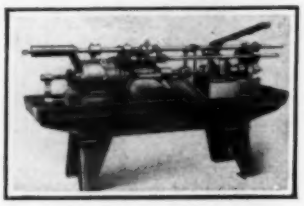
— 117 —

Tapping Machine, Automatic, for Pipe Couplings

Foote-Burt Co., Cleveland, Ohio. [Vol.66,p.391]

This single-spindle automatic tapping machine is for use on pipe couplings. It is manufactured in two sizes, the smaller size for couplings from ½ to 1-in. and the larger for couplings from 1¼ to 2-in. nominal size.

The machine is automatic in action. While the tap is completing its course through one coupling, it is starting to tap another, two vises being used to hold the couplings. After a piece has been tapped the spindle moves back from the tap while a stripper pulls a completed coupling off the shank end of the tap. A new coupling is pushed into place in the first vise and this pushes the



tapped coupling carrying the tap into the second vise. The coupling which was in the second vise is carried back on the shank of the tap to be pulled off by the stripper in the next cycle.

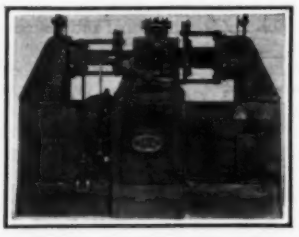
— 118 —

Tapper, Lead-Screw, Natco

National Automatic Tool Co., Richmond, Ind. [Vol.66,p.395]

This machine has a patented lead-screw feed to each individual spindle, so that holes of different sizes and leads may be tapped simultaneously. A thread on the shank of the spindle has the same leads per revolution as the tap it drives.

The entire feed mechanism is carried on a heavy plate bolted to the front of the head. The bronze driving nuts are held in this plate by split springs on the front side and flanges on the back side. The



spring serves as a safety device and releases the driving nut should the tap strike a broken drill or other obstruction.

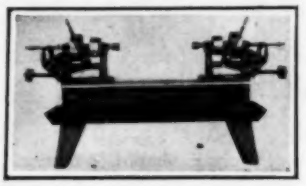
The machine shown has countershaft drive but similar machines are also built with direct motor drive. They can be supplied in a wide range of sizes covering all kinds of work.

— 119 —

Tapping Machine, Horizontal, Duplex, Automatic, No. 2-X, Garvin

Western Machine Tool Works, Holland, Mich. [Vol. 66,p.715]

This machine may be used on small or large work that requires tapping holes in both



sides or ends. The two heads are movable along the bed and either may be removed in a few minutes. The heads are equipped with Timken roller bearings and are controlled by mechanically-operated clutches. Two pulleys are mounted on the head shaft and are intended to be belted direct to the line-shaft.

Jigs or fixtures can be securely fastened to the beds between the spindles.

The machine is semi-automatic in operation in that it is only necessary for the operator to start the tap in the work.

— 120 —

Tapping Machine, Automatic, No. 2-X Garvin

Western Machine Tool Works, Holland, Mich. [Vol. 66,p.756]

The 2-X machine is equipped with Timken roller bearings and has integral motor drive in connection with a special speed reducer which is so designed that the input shaft can be placed at any height to suit the base-to-center height of the motor. The machine can also be belt driven.

The head is a separate unit from the column and a special duplex column can be provided so that two heads can be bolted to one column, thus doubling the capacity of the machine.

Table improvements include deep oil channels and large drains into oil reservoirs. The table is mounted on an arm that is adjustable vertically and around the column.

The machine will handle U. S. Standard taps in cast iron ranging from ¼ to ⅞ in. and in steel from ¼ to ⅝ in. It

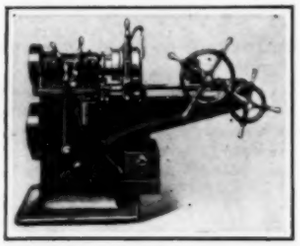
will tap a hole up to 2½ in. in depth. The motor is rated at 2 hp., and the machine occupies a floor space of 31x45 in. Its net weight is 1,050 pounds.

— 121 —

Bolt-Threading Machine, "Rapiduction"

Williams Tool Corporation, Erie, Pa. [Vol.66,p.193]

This bolt-threading and cutting machine, of the geared-head type, has been built for high production work. From one position the operator has complete control of the machine, which is motor driven and has seven speeds. A clutch



is provided for making the shift and a speed plate behind the control lever gives the correct position for each size bolt.

Large die holders support the renewable high-speed steel dies. No special head adjustment is needed except for the actual fitting of the thread that is to be cut. Dies can be quickly changed. The die-head support, cam ring, die holders, and shell are all inclosed. The head is adjusted by pulling a lever forward and is released by a trip rod adjusted in the carriage for any length of thread.

The machine is sturdily constructed and has a large factor of strength to withstand shocks and strains. The design is somewhat similar to the "Rapiduction" pipe threading machine.

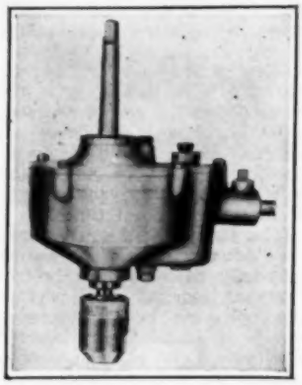
— 122 —

Tapping Attachment, High-Speed, "Ettco," No. 2

Eastern Tube & Tool Co., 594 Johnson Ave., Brooklyn, N. Y. [Vol.66,p.716]

The No. 2 "Ettco" tapping attachment is designed for high-speed sensitive tapping and has a capacity of ⅜ inches.

The leather-lined cone clutch and cast-iron driving cone have a smoothness of action and a slipping point that are said to eliminate tap breakage. The reverse speed is twice the forward speed. Left-hand threads can be tapped as readily as right-hand, if the threaded Morse shank is locked in the tapper.



An aluminum case and light alloy-steel parts greatly reduce the weight of the tool so that it can be applied to light drill presses.

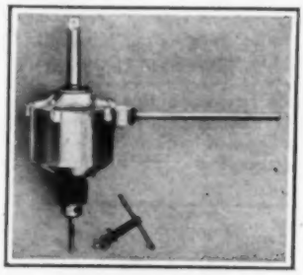
— 123 —

Tapping Attachment, High-Speed

William L. Procunier, 18 S. Clinton St., Chicago, Ill. [Vol. 66,p.753]

The high-speed tapping attachment will drive ¼-in. taps in steel and ⅜-in. in cast iron.

The unit contains an internal gear that meshes with three intermediate spur gears, which engage the reverse gear. The spindle is secured to a fiber cone clutch, and when driving, the surface of the upper half of the clutch is engaged with the drive shell. When the tap is withdrawn, the clutch engages the



reverse shell and the tap backs out at double speed.

The upper thrust is taken by a ball thrust bearing as is the lower thrust. It is said that bottom or blind tapping may be accomplished as easy as through tapping since the power may be regulated by the amount of pressure applied on the drill press spindle by the operator.

Other Machines

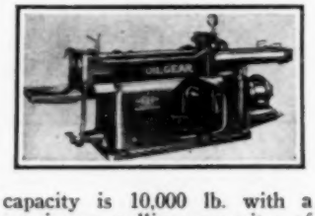
— 124 —

Broaching Machine, High-Speed, "Twin Ten"

Oilgear Co., Milwaukee, Wis. [Vol.66,p.231]

This "Twin Ten" broaching machine has two spindles and in operation, while one spindle is on the working stroke, the other is on the return stroke. The machine is especially adapted for high-speed broaching on medium size parts.

The stroke is adjustable from 6 to 36 in., and the speed is adjustable from 48 to 360 in. per min. The normal pulling



capacity is 10,000 lb. with a maximum pulling capacity of 12,000 lb. The machine is capable of making about 500 36-in. strokes per hour. It is arranged for both hand and double foot pedal control.

The oil pressure is obtained from a Type W oil pump, which is an integral part of the machine, and which can be driven from any line-shaft or belted to a motor.

— 125 —

Chucking Machine, Automatic, No. 23-A

New Britain Machine Co., New Britain, Conn. [Vol.66, p.750]

This automatic chucking machine of the tool-rotating type is a development of the No. 12-A machine. The improved machine has four spindles, is of greater capacity, and has many special features.

It is designed to handle small castings or forgings for turning, boring, facing, threading and similar operations. The pieces are held in screw chucks operated by air pressure and automatically controlled by the cycle mechanism. The turret is indexed to five positions by a modified Geneva movement. Provision is also made to operate the chucks hydraulically instead of pneumatically by modifying the valves.

A fifth spindle can be provided to carry a spotting drill. The spindles are made of heat-treated vanadium steel and run in tapered bronze bearings. In-

dividual speeds ranging from 160 to 1,200 r.p.m. in four groups are obtainable.

The longitudinal movement of the spindles is actuated by cams in the usual manner. The maximum combined range is 3 in. The minimum gap is 4½ in. and the maximum, 9½ in. The center distance between spindles is 6½ inches.

The threading spindle has a range of speed from 45 to 700 r.p.m. A device on the rear end provides a positive lead to start the threading tool in the work.

The drive to the machine is by belt to a constant-speed pulley. A bracket is also provided for a 7½-hp. motor partly inclosed by the base. The working parts of the machine are almost entirely inclosed, but all are accessible.

Ordinarily the cycle is automatic and continuous and the operator has only to place the new piece in position after the finished one is ejected. If desired, the machine may be adjusted to stop after each movement.

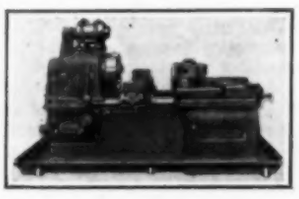
— 126 —

Chucking and Turning Machine, Model 5-D, "Power-Flex"

Potter & Johnston Machine Co., Pawtucket, R. I. [Vol.66, p.909]

The machine is of unit construction, and all major parts are integral and bolted to the base. The ways upon which the turret slide moves are separate pieces of hardened steel, ground in place.

The main spindle runs upon roller bearings and carries a 16-in., three-jawed chuck. The drive is by a constant-speed pulley from a 10- to 15-hp.



motor. Multiple V-belts are used when the motor is mounted above the headstock, but a flat-faced pulley may be substituted if countershaft drive is desired. A friction clutch and combined brake is used to control the machine.

Helical gearing is used in the headstock, and the alloy steel shafts revolve upon roller bearings. Twenty speeds, ranging from 16 to 304 r.p.m. in five groups of four speeds each, are provided for the spindle. In each group the four changes are effected automatically, other changes being made by pick-off

gears. Twenty-four feeds, arranged in geometric progression from 0.007 to 0.165 in. per rev. are provided in three groups: coarse, medium, and fine.

The cross-slide is actuated by a drum cam, which can be varied. The slide travels 10 in. The turret slide is also actuated by a drum cam and has a longitudinal travel of 13 in. The turret has five faces and is indexed by a Geneva movement. It is clamped upon its seat after indexing by a cam-operated drawbolt.

The sequence of changes in the cycle movement is effected automatically by means of adjustable dogs and is under hand control as well.

The maximum swing over the shears is 25 in. and over the cross-slide, 12 in. Maximum length of work that can be piloted is 6¼ in. The net weight is 10,500 lb. and the floor space occupied is about 110x48 inches.

— 127 —

Chucking Machine, Automatic, 6-DP, Platen Type

Potter & Johnston Machine Co., Pawtucket, R. I. [Vol.66, p.1106]

The 6-DP automatic is a platen-type machine and is adapted to a wide range of chucking and between-centers work. It is capable of taking a number of cuts simultaneously.

The base is of heavy box construction with wide flat ways. The drive is by a constant-speed pulley equipped with a multiple-

disk clutch and brake. Four automatic changes of speed are provided.

All shafts are of chrome-nickel steel, heat-treated, as are all the gears. The spindle itself is a high-carbon steel forging and is mounted on Timken roller bearings.

The platen, or table, is of heavy construction and is moved by a cam so that it can be utilized for cutting as well as for bringing the tool slides into operative position. On this platen is mounted a plate, on which may be fastened the requisite number of tool slides. For work between centers the machine is furnished with a live center, mounted on Timken roller bearings. The standard tool slides are of heavy construction and are approximately 10x18 in. in size.

Where motor drive is desired, the motor is mounted on a plate directly on the headstock.

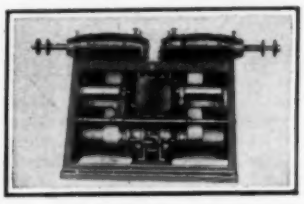
— 128 —

Buffers and Polishers, Selective-Speed

U. S. Electrical Tool Co., Cincinnati, Ohio. [Vol.66,p.37]

This line of selective-speed buffing and polishing machines has motor-in-base drive, and spindle speeds of 2,750 or 2,250 r.p.m., depending on the pulley sizes.

The two spindles are separate and are driven by belts from pulleys at either end of the motor. Belt-shifting levers are



provided, and the belt tension is maintained by idler rollers. The illustration shows the method of drive.

Each machine is equipped with SKF ball bearings and the spindles are chrome-nickel steel. An automatic, push-button control is used and the control units are mounted within the base. The machine is built in five sizes with 3, 5, 7½, 10- and 15-hp. motors, respectively.

— 129 —

Polishing Machine, Centerless-Feed

Production Machine Co., Greenfield, Mass. [Vol.66,p.191]

This production polishing machine was designed especially to handle cylindrical work, although flat and other shapes that can be handled manually can be polished upon this machine also. The machine may

be arranged for direct motor drive or tight-and-loose pulley drive.

The active portion of the abrasive belt passes over the vertical face of a foot-operated press or platen. An improved tension device has been developed, by means of which the belt is maintained under uniform tension at all times.

The feature of the machine is the "centerless feed," consisting primarily of an endless belt to carry cylindrical work across the polishing belt. Provision has been made for tilting the feed unit a variable amount to control the rate of feed.

The machine handles work from ¼ to 6 in. in diam. It is adaptable to the operations of lapping, polishing and buffing upon a wide variety of materials, particularly metals.

— 130 —

Sander and Grinder, Combination Belt and Disk

Porter-Cable Machine Co., Syracuse, N. Y. [Vol.66,p.474]

The combination belt and disk grinder and sander is designed for use in rough and finish grinding. The disk side of the machine has a table which tilts up and down and carries an angle and a core print page. The disk is 15 in. in diam. and operates at a speed of 1,725 rev. per minute.

The belt side also has a table and angle gage. The abrasive

belt is 6 in. wide and it travels at 3,300 ft. per min. Two belts are furnished, one for wood, the other for metal. A patented vacuum dust collecting system is built into the machine.

Ball bearing construction is used throughout. A 3-hp. motor furnishes the power to operate both the disk and the belt. Built into the machine is a patented vacuum dust collector system.

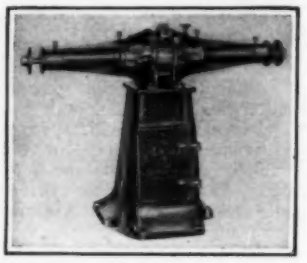
The machine occupies a floor space of 30x20 in. and is 60 in. in height. It weighs 300 lb. net.

— 131 —

Buffing and Polishing Machine

Standard Electrical Tool Co., 1938 W. 8th St., Cincinnati, Ohio. [Vol.66,p.553]

These buffing and polishing machines can be supplied with motors of 3, 5 and 7½ hp., respectively. General Electric 40-



deg. motors operated by means of push buttons are used.

The armature shaft is made of nickel steel and is mounted upon four SKF ball bearings.

These buffers can be furnished for operating speeds of 1,750 or 3,450 rev. per minute.

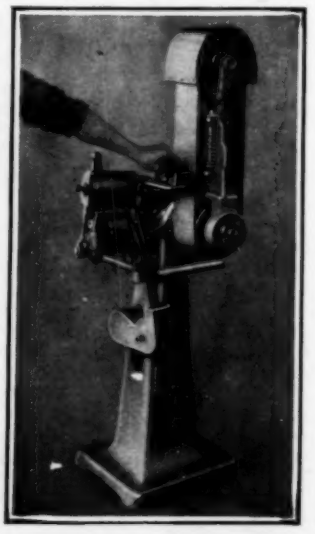
— 132 —

Polishing Machine, Centerless-Feed, Type S

Production Machine Co., Greenfield, Mass. [Vol.66,p. 559]

The Type S centerless-feed polishing machine can be adjusted to run in either a vertical or a horizontal position, and a taper spindle is provided for miscellaneous internal work. The centerless-feed principle is patented by the company.

Cylindrical work ranging from ¼ to 1 in. in diam. and in various lengths may be fed through the machine automatically, small and short articles being handled by means of hoppers and special fixtures. Flat



and irregular shapes may be finished by hand either on the table or on the unsupported, flexible part of the belt.

The finishing member is an abrasive belt of either canvas or felt depending upon whether finishing, buffing or coloring is desired. It is driven by a pulley direct-connected to a 1-hp. motor operating at 1,750 r.p.m.

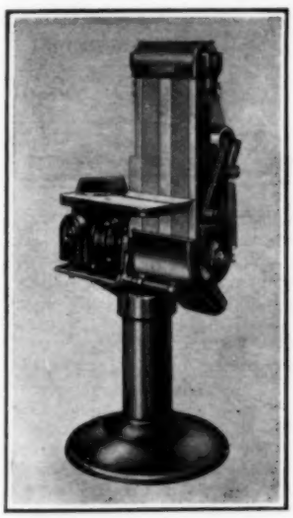
In a vertical position the machine occupies a floor space of 15x23 in., in a horizontal position 23x30 in. It can be furnished with base or without.

— 133 —

Two-Belt Attachment for Belt Sander

Porter-Cable Machine Co., Syracuse, N. Y. [Vol.66,p.676]

This two-belt attachment makes it possible to use two belts each having a maximum with of 4½ in. on the type B-3 belt sander, which ordinarily carries a single belt 10 in. wide.



One belt is for roughing, the other for finishing.

The attachment has an aluminum idler pulley held against the right-hand belt by a spring to secure the proper tension. The lower pulley is straight while the top pulley is double crowned for each belt. Each belt is independent of the other.

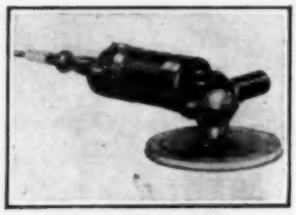
Curved or irregular shapes can be free-hand sanded on the belt at the back of the machine due to the flexibility given by the presence of a third pulley. A flexible canvas and felt pad can also be fastened to the bed at the front.

— 134 —

Sander, "Hicycle," No. 9

Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y. [Vol.66,p.912]

A direct motor-driven sanding disk of light weight is announced. The motor is of the



squirrel-cage induction type and it operates on a frequency of 180 cycles per sec. and 230 volts, 3 phase. A special motor-generator set or frequency changer is required. The rotor speed is reduced by means of spiral-bevel gearing.

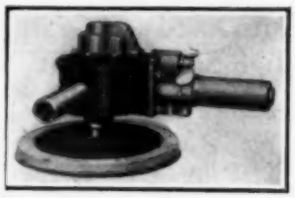
Two handles afford convenient means for controlling the position and pressure to be applied to the tool. The cable enters through one of the handles and the switch is located near this point. The weight of the tool is 13½ pounds.

— 135 —

Air Sander

Rotor Air Tool Co., Cleveland, Ohio. [Vol.66,p.1073]

The sander is designed to provide ample power for metal finishing operations, such as grinding, sanding or wire



brushing. The motor is mounted directly over the pad or wheel and drives without the use of gears. The unit weighs 11 lb. and is well balanced.

There are two cylinders and each has an eccentric rotor. The rotors are keyed to the shaft in opposed positions. The speed may be changed by an adjustable governor from 4,500 to 6,500 r.p.m. With this range, the machine is suitable for use with pads of either 9 or 7 in. diameter.

The shaft runs in ball bearings. A governor automatically reduces the speed when the wheel is removed from the work. Oil is supplied through a reservoir in the handle.

— 136 —

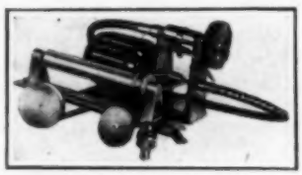
Refinishers and Buffers, Portable, Models M-1 and M-2

Matthews Manufacturing Co., Newton, Ia. [Vol.66,p.1114]

Model M-1, shown, is designed especially for refinishing aluminum and copper washing machines, but can also be used for all kinds of finishing operations. It is mounted on a compact bench-type swivel tripod. The motor is rated at ⅓ hp. and operates at 3,400 r.p.m. It is designed for use on 110-volt, 60-cycle current.

The flexible shaft is 5½ ft. in length and there is furnished as standard equipment, a wire wheel, 5 in. in diam., a buffing wheel 5 in. in diam. and a grinding wheel 4 in. in diam. A chuck of ⅜ in. capacity is also furnished for use in drilling operations.

The M-2 unit is equipped with a ½-hp. motor operating at 1,725 r.p.m. The base is



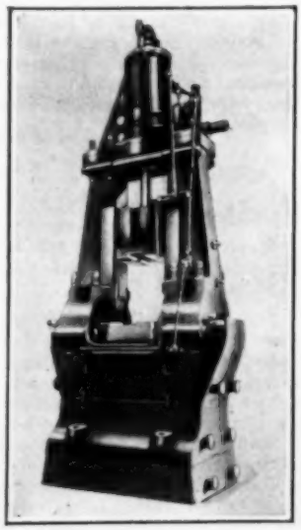
mounted on low casters. The motor carries a two-step pulley driving through a link leather V-belt. Two speeds are available of 1,000 and 3,500 r.p.m. The same equipment is used on this machine as with the Model M-1, except that the shaft is longer and the wire wheel 6 in. in diameter.

— 137 —

Hammer, Drop, Steam, Large Size

Erie Foundry Co., Erie, Pa. [Vol.66,p.717]

The reciprocating parts of this machine, including the top die, weigh 20,000 lb., and the total weight is approximately 250 tons. The anvil is cast in three pieces. The over-all height of the hammer is 33 ft., but when installed most of the anvil will be below the floor line, which is at the level of the treadle just below the sow block. The working face of the ram is approximately 44 in. square, and the rated stroke of the hammer is 50 inches.



The hammer is constructed almost entirely of steel castings and hollow steel forgings. The entire upper part of the hammer forms a rigid unit which can be adjusted across the anvil to align the dies.

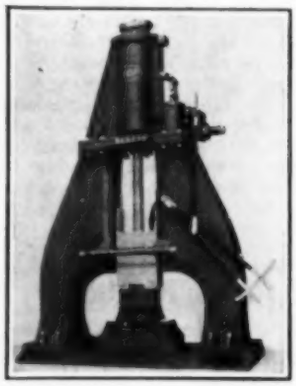
— 138 —

Hammers, Steam Double-Frame

Niles Tool Works Co. Division of the Niles-Bement-Pond Co., Hamilton, Ohio. [Vol.66, p.916]

These hammers range in capacity from 3,500 to 8,000 lb. Owing principally to improved valve and steam passage design, it has been possible to obtain 30 per cent greater speed in operation than in former designs. Forged and cast steel has been adopted as far as possible for the main members, and conventional design has been avoided to secure additional strength.

The hammer is of the double-acting type, and the length of



stroke, position, speed and intensity of blows are controlled either automatically or by hand. The operating valve is of the balanced-piston type. The piston is forged integral with the rod and is made of nickel steel. The frames are heavy steel castings of box section and are lipped into the base.

The anvil is a close-grained iron casting entirely independent of the baseplate. The anvil cap is an annealed open-hearth steel casting and is keyed to the anvil.

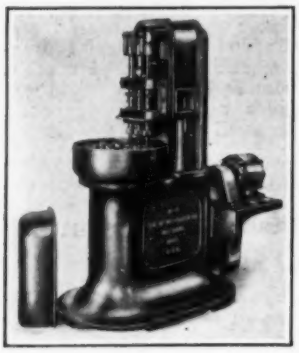
— 139 —

Lapping Machine, Hole-, Semi-Automatic

Bethel-Player Co., Westboro, Mass. [Vol.66,p.73]

This machine, which is designed to lap ground holes in hardened parts, is automatic except for unloading and reloading the work.

Holders for the work are necessarily designed for the job



in hand. There are four holders, each accommodating three pieces of work to be lapped simultaneously. The cast-iron lap rotates with respect to the work, but both are free to float and thus adapt themselves to each other without imposing lateral pressure.

The machine is chain-driven by an electric motor. The cycle time may be set for any period from 20 sec. to 1 min. The lapping spindles are rotated at high speed and have a comparatively slow reciprocating motion through a limited range, the amplitude of which may be adjusted.

The cycle of the machine includes presentation of the work to the lap by raising the table, lapping the work to size, lowering the table to withdraw the lapped work, and indexing for new work to be lapped.

— 140 —

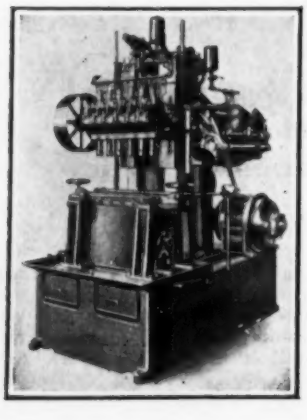
Lapping Machine, Multiple-Spindle, Improved, No. 10

Moline Tool Co., Moline, Ill. [Vol.66,p.754]

The original design of this machine required two clutches, one on the main shaft through which the rotation of the spindles was controlled and the other on the main driving gear through which the reciprocation could be controlled independently.

In the improved design both of these clutches have been eliminated, and in their place one large twin-disk clutch has been substituted. It is mounted on the drive pulley of the main shaft and by it the entire machine can be stopped and started at will.

On the end of the main driveshaft a large drum brake is mounted and is applied when the clutch is disengaged. This feature is particularly desirable in stopping the reciprocation of the rail and the rotation of the laps in the withdrawn position.



— 141 —

Profiling Machine

Oliver Instrument Co., Adrian, Mich. [Vol.66,p.237]

In the profiler illustrated the spindle is mounted on the end of a swinging arm and is free to move to any part of the table on which the work is clamped. The cutter movement is guided by hand and, in addition to movements in the horizontal plane, the spindle has a limited vertical travel and can be adjusted for various thicknesses of work. The swinging arm and motor are mounted on a carriage traversed by means of a handwheel.

The spindle is guided and held to its work by a rod extending from a swinging arm with a knurled grip engaging a rack, thus relieving the operator of the tool pressure.

This profiler can be used for die making, metal pattern making, cam cutting, engraving, embossing, and profiling, either free hand or by means of a templet.

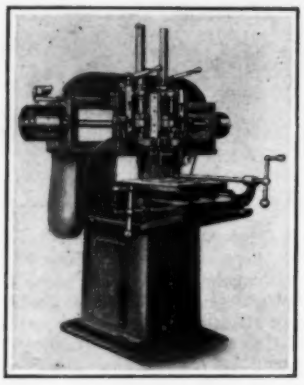
— 142 —

Profiler, No. 5

Frew Machine Co., 124 W. Venango St., Philadelphia, Pa. [Vol.66,p.797]

The two-spindle No. 5 profiler shown can also be furnished in single and multiple-spindle types. The machine is driven by a tight-and-loose pulley through a change-gear box. It can also be arranged for motor drive.

Four gear changes are provided, and spindle speeds ranging from 452 to 863 r.p.m. can normally be obtained. The spindles are driven through steel spiral gears, hardened and ground and run in bronze bearings. The standard taper in the spindle is No. 7 B & S, but special tapers can be provided.



The working surface of the table is 12x15½ in. and the distance between uprights is 16 in. The table has a longitudinal movement of 20 in., as has the slide. The vertical movement of the spindle is 3 in.

The machine weighs about 2,400 pounds.

— 143 —

Cut-Off Saw, Metal, High-Speed, No. 0

Hunter Saw & Machine Co., Pittsburgh, Pa. [Vol.66,p.754]

This high-speed metal cut-off saw has been designed to cut cold metals such as the smaller light - section beams, tubing of all kinds, metal mouldings, and light pressed shapes.

The saw blade is mounted directly on the motor shaft which rotates at 3,500 r.p.m. The motor is rated at 5 hp. and can be furnished for 50 or 60 cycles, two or three phase and in 220, 440 or 550 volts.

The saw blade is fully protected by steel guards and is fed down by an off-side hand lever attached to the tilting frame. A stop is provided so the saw will just cut through the material being cut. Motor, saw and frame are counterbalanced by an adjustable weight.

The table is provided with a quadrant stop and a quick-acting eccentric vise.

The machine occupies a floor space of 23x37 in. and has an overall height of 55 in. The weight is 900 lb. net.

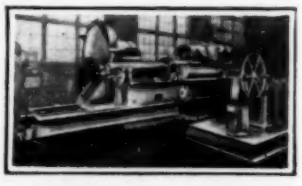
— 144 —

Rotary Attachment for Friction Saws

Joseph T. Ryerson & Son, Inc., Chicago, Ill. [Vol.66,p.755]

The rotary attachment is for use with the Nos. 3 or 4 Ryerson high-speed friction saws so that large rounds, squares, pipe, and the like, can be cut to the short lengths in a minimum of time.

The attachment consists of a structural framework upon which a carriage for holding the material travels. A pneumatically operated chuck grips one end of the stock, which is rotated by means of a constant-speed motor. The worktable also carries a center rest to receive bushings for various sizes of material, a sliding gage stop, and a V-shaped support to hold the work while it is being cut.



On the central control stand, levers controlling the saw and cooling water for the blade, air valves for operating the pneumatic chuck, and a capstan wheel for moving the material forward to the next cut are all located.

— 145 —

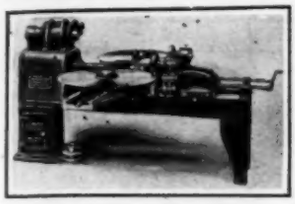
Tooth Cutting Machine, Cold-Saw

J. L. Osgood Tool Co., 43 Pearl St., Buffalo, N. Y. [Vol. 66,p.353]

The duplex combination cold saw tooth cutting machine has a capacity for cutting saws ranging in diameter from 20 to 90 in. and from ¼ to ½ in. in thickness. Two saws of unequal diameter and thickness can be cut and ground at the same time, as each front and rear saw spindle and grinder heads is independent.

While the teeth are being cut by a high-speed steel cutter, two motor-driven emery wheels, one above and the other below the saw, are grinding off the burrs formed.

The machine is regularly



equipped with a 3-hp. constant-speed motor. Single-pulley belt drive can also be furnished with or without a countershaft. When two 7-ft. saws are being cut, the floor space occupied is 11x16 ft. The weight of the machine is 4,500 pounds.

— 146 —

Nibbling Machine, No. 0

Andrew C. Campbell, Inc., Bridgeport, Conn. [Vol.66,p. 393]

The No. 0 bench-type nibbling machine can be furnished with direct motor drive, as shown, or mounted on a stand.

The machine has a capacity for cutting material up to No. 14 gage, or $\frac{3}{32}$ in. in thickness.

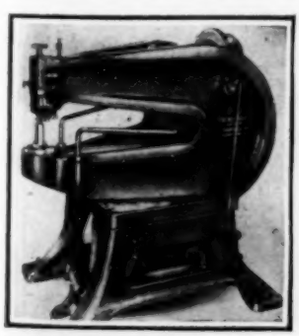
The throat is 8 in. deep and the punch $\frac{7}{16}$ in. in diam. With a normal speed of operation of 950 strokes per min., the cutting speed is 5 ft. per min.

— 147 —

Nibbling Machine, No. 2B

Andrew C. Campbell, Inc., Bridgeport, Conn. [Vol.66,p. 436]

This machine is for cutting sheet material up to $\frac{1}{8}$ in. in thickness. It may be furnished



for either belt or motor drive.

At the rated pulley speed of 350 r.p.m., the machine will cut approximately 26 lineal in. per minute. A 1-hp. motor is required to drive the machine.

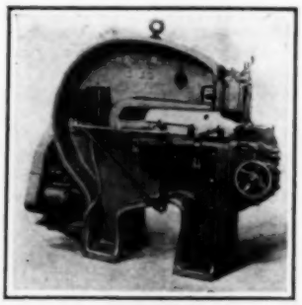
The depth of throat is 30 in. The net weight of the belt-driven model is 4,450 lb. and it occupies a floor space of 4 ft., 7 in. by 3 ft., 5 in. It is 5 ft. in height.

— 148 —

Unishear, Model B

Unishear Co., 175 Fifth Ave., New York, N. Y. [Vol.66,p. 712]

The heavy-duty Model B Unishear will cut straight lines or curves on both the inside and outside of flat stock up to $\frac{1}{4}$-in. cold rolled steel, and heavier cuts in lighter ma-



terial in proportion. The maximum cutting speed is 10 ft. per min. and the minimum radius 6 in. The throat has a depth of 36 inches.

In the upper forward part of the cast steel frame, the head unit with stationary, but adjustable blade is carried and on the lower forward part the head unit containing the oscillating rocker with its blade and driving mechanism is mounted.

The cut can be started at any point within the sheet, and the blade motion is such that a feeding action is obtained.

To support heavy sheets and to facilitate their movement, ball casters are mounted on arms outside the frame and inside the throat.

The sheet is also supported by the table in front and in the rear by ball bearing rollers.

The machine occupies a floor space of 6x2$\frac{1}{2}$ ft. Its weight is about 5,000 lb. Either belt or motor drive can be furnished.

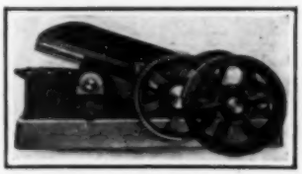
— 149 —

Lever Shear

Long & Allstatter Co., Hamilton, Ohio. [Vol.66,p.757]

The lever shear is of all steel construction except the flywheels, bearings and tapered liner. The main machine parts are protected against breakage by a shear pin.

Twin gears, machine cut from steel, are used so that the load is distributed evenly. The gear bearings are bronze-



bushed as is the main lever bearing. The thrust on the blade is taken by a tapered gib.

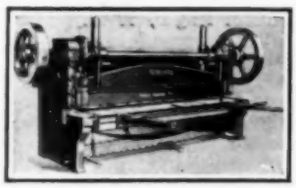
— 150 —

Hold-Down for Squaring Shear

Niagara Machine & Tool Works, Buffalo, N. Y. [Vol. 66,p.76]

This hold-down for use on medium-capacity squaring shears is automatic in operation and is timed to grip the sheets firmly until the cut has been completed.

Each foot of the device is independently self-adjusting for wear and different thicknesses of material. Its construction provides for the accommoda-



tion of sheets with kinks, dirt, or other foreign matter, and for sheets shorter than the length of the shear. The horizontal member is a steel channel and is actuated by two cams on the mainshaft of the shear.

The hold-down is being furnished for shears operating on sheets of No. 14 gage and heavier where the cutting length is 8 feet or longer.

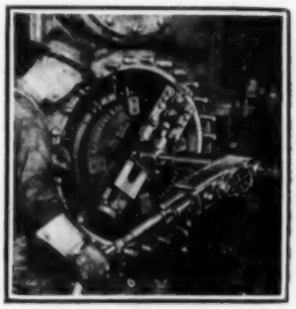
— 151 —

Facing Machine, Portable, Improved, for Cylinder Flanges

E. J. Rooksby & Co., 1042 *Ridge Ave., Philadelphia, Pa.* [Vol.66,p.998]

The illustration shows the machine set up in a locomotive cylinder for refacing the joint. Four pads are used to bolt four parallel strips to the machine to hold it parallel to the cylinder flange while setting up.

The improved slide block has clamps and studs to hold the toolholder, and a setscrew at the top of the toolholder is used to set out the cutter.



A safety guard has also been added to cover the star wheel. These machines are made in five sizes to reface flanges ranging from 18 to 45 in. in diameter.

— 152 —

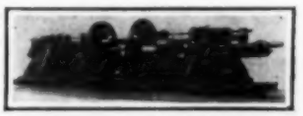
Quartering Machine, Improved, 90-Inch, Niles

Niles Tool Works Co., Division of the Niles-Bement-Pond Co., Hamilton, Ohio. [Vol.66,p.994]

In the improved machine the inverted V-type ways have been supplanted by a bed having flat tracks to afford a more effective bearing surface for the heads.

The revolving box-tool crankpin head also has a wider bearing. In addition to the turning tools provided, burnishing rollers are now regularly furnished.

Screw links are now used to rotate the wheels in the central V-supports to bring them into position for quartering or pin turning. The outer screw for elevating or lowering the quar-



tering saddle has been moved further out toward the end of the bracket, upon which the toolhead slides. The bearing area for this bracket has been more than doubled.

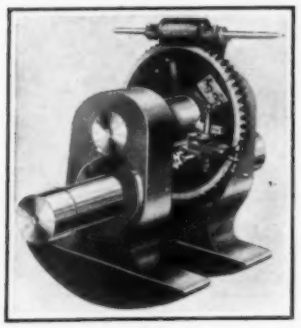
A double set of push buttons is situated on each head. One set is located near the wheel set, the other alongside the operating handwheels. Limit switches automatically prevent overtravel of the boring bars. In other respects the capacity and design of the machine remains unchanged.

— 153 —

Crank-Pin Turning Machine, Portable

E. J. Rooksby & Co., 1042 *Ridge Ave., Philadelphia, Pa.* [Vol.66,p.1032]

The machine is shown truing up the center crank pin of a 3-cylinder locomotive, but the



unit is equally adaptable to any center-crank engine, whether steam, gas or Diesel.

It consists essentially of a stationary disk and a revolving disk supported in the stationary one by a keeper ring. The revolving disk is driven by a pneumatic or an electric motor, and carries a substantial arm with a slide block and turning tool.

The unit is split and the joints are provided with a tongue and groove to facilitate accurate assembly. Provision is made for setting to the original center of the pin.

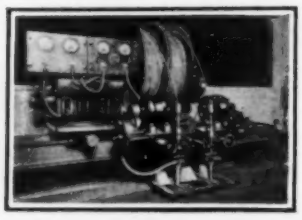
The machine has a capacity for turning crank pins from 8 to 11½ in. in diameter, and from 7½ to 9 in. in length.

— 154 —

Welder, Automatic Duo-Arc

General Electric Co., Schenectady, N. Y. [Vol.66,p.232]

The welder consists of a standard travel carriage on which are mounted two automatic welder heads and two reels of electrode wire. It is



of particular value in butt welding heavy plates where two electrodes can work one behind the other. Thus, the necessarily large quantity of metal required to fill up the seam is deposited in practically one half the time that would otherwise be required. The manufacturers claim that the operation is just as simple as that of single-arc travel carriages.

With electrodes $\frac{3}{16}$ in. in diam. and approximately 250 to 300 amp. in each arc, a speed of welding of from 5 to 7 in. per min. may be obtained. The resulting weld is of high quality because of the decreased chance of burning the weld, since a large amount of electrical energy is not concentrated in a single arc.

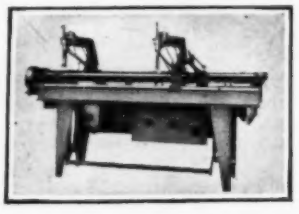
— 155 —

Welding Machine, Butt, Carbon-Arc

Lincoln Electric Co., Cleveland, Ohio. [Vol.66,p.599]

With this arc butt welder a plug may be welded into the end of a tube or a round bar of small diameter may be welded into one of large diameter. The heat is applied to the joint by the carbon arc and the bars are revolved to distribute the heat uniformly. End pressure is applied to squeeze out the slag and complete fusion.

In the case of welding a plug-shaped piece into a tube the



pieces are held with spring chucks.

The maximum diameter of tube that can be handled on this machine is 8 in. and the maximum length, 60 in. Tube wall thicknesses up to ⅝ in. may be welded, and at this maximum capacity the welding rate is 40 ft. per hr. Power is supplied to the arc through a motor-generator set.

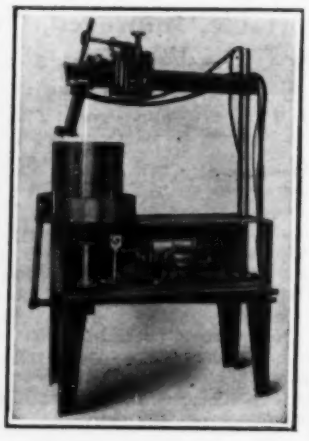
The entire machine is built of welded steel, and occupies a floor space of 4x10 feet.

— 156 —

Welder, Carbon-Arc Machine-Driven

Lincoln Electric Co., Cleveland, Ohio. [Vol.66,p.677]

This carbon-arc welding machine is automatic in action and will weld circular seams up to 12 in. in diam. A particular feature is the cooling tube around the revolving table which carries the piece being welded. This piece may be partially or totally immersed in water during the welding operation.



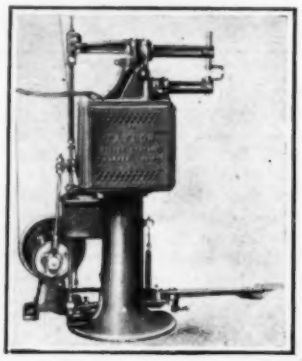
This cooling arrangement was developed particularly to meet the requirements when welding alloy steels in which the heat disturbance due to application of the carbon arc must be reduced to a minimum. The rapid quenching of the molten metal that takes place preserves the normal physical properties of the steel.

— 157 —

Power Attachment for Foot-Operated Welding Machines

Stratford Manufacturing Co., P. O. Box 11, Stratford, Conn. [Vol.66,p.956]

The device is to be attached to any standard foot-operated welding machine. It consists of a floor bracket carrying a short shaft, upon one end of which is a flywheel connected with the shaft through a lock-bolt clutch, and on the other a crank disk and pin, or a cam, according to the type of machine to which it is to be applied. There is also a brake



that operates when the clutch is disengaged.

The pitman of cam follower is connected to the lever of the welding machine and the regular treadle is connected to the clutch of the device.

The object is to apply pressure, uniform in degree and duration, to the electrodes. The device starts upon the depression of the treadle, makes one full revolution, and stops automatically in the original position.

— 158 —

Nut Setter, No. 4

Teer, Wickwire & Co., Jackson, Mich. [Vol.66,p.75]

The high-speed nut-setting machine is adaptable to any assembly requiring nuts that can be conveniently moved under the spindle.

The hopper automatically selects the nuts with the proper face up and delivers them to a trough from which they pass

to the wrench head at the end of the spindle, one at a time. A pusher inside the spindle forces them into the lower end of the socket wrench and also furnishes a solid backing for the nut, preventing cross-thread starting.

The machine is operated by a treadle. The tension at which the nut is screwed up can be adjusted by means of a friction clutch. This machine will handle nuts ranging in size from $\frac{1}{16}$ to $\frac{3}{8}$ in., and it can be quickly converted from one size to another. Drive is by a 2-hp. motor.

— 159 —

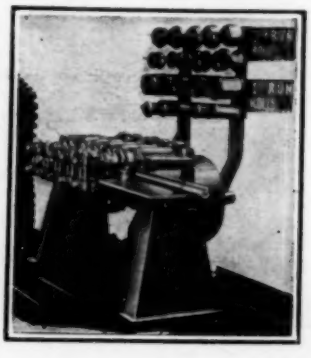
Forming Machines, Roll

Kane & Roach, Syracuse, N. Y. [Vol.66,p.194]

These roll machines are for cold forming of channels, angles, square and round tubing, radiator slats, window ventilators, baby carriage wheel rims, automobile brakeband dust covers, and a large variety of special shapes. The machine shown is set up for forming the tube of a windshield wiper.

The machine will operate from 50 to 250 ft. per min. It is made in seven sizes with any number of rolls required. Bending or straightening-roll attachments can be supplied as required. The machines are arranged for either belt or self-contained motor drives.

The rolls are made of special-analysis forged steel, heat-treated and ground. The upper roll shafts are mounted in ad-



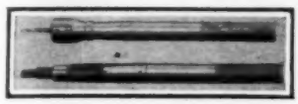
justable eccentric bearings. A tie bar with bronze-bushed bearings is used on the outside of the rolls to prevent springing. On the larger size machines a sub-base extends out under the roll shafts, and on it are mounted outer bearings that tie the rolls together both horizontally and vertically.

— 160 —

Screw Driver and Drill, Power-Driven

Stow Manufacturing Co., Inc., Binghamton, N. Y. [Vol. 66,p.232]

A power-driven screw driver and drill unit for use with flexible shaft equipment are available. When motor driven, any standard motor for use on any commercial circuit can be supplied. Belt drive from a countershaft can also be obtained.



The drive unit may be suspended from the ceiling or, in the case of the motor-driven type, mounted on a floor stand.

The tools themselves are counter balanced. They are made of high-grade tool steel. The screw driver has a slip clutch that may be adjusted so that the screw can be driven at any desired amount of torsion. A sliding sleeve is provided for centering wood screws.

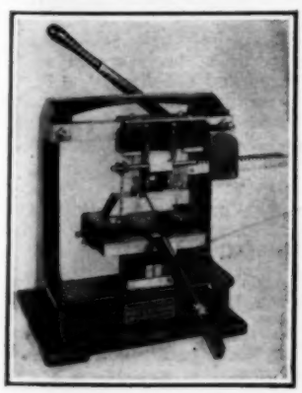
The tool is built in two sizes; for driving screws up to No. 14 size wood screws, and over this size.

— 161 —

Numbering and Knurling Machine, Automatic

Noble & Westbrook Manufacturing Co., Hartford, Conn. [Vol.66,p.228]

This machine is for marking serial numbers and other special marks for identification, such as dates and the like, and for knurling the border on small rings.



The machine is fitted with a special automatic numbering head designed to mark the parts as they are placed on the mandrel. The numbering head is arranged so that it will put a serial number on the periphery of the ring, also the identification mark and date, followed by a knurl on the edge of the ring. The ring is automatically ejected onto a needle, which keeps the rings in proper sequence.

The operator is only required to place the rings on the mandrel and pull the lever handle. The complete machine weighs 75 lb. and occupies a space of about 12x16 inches.

— 162 —

Notcher, No. 60 and Bender, No. 61

Whitney Metal Tool Co., Rockford, Ill. [Vol. 66,p.276]

This company has brought out two tools for working 3x3x3/8-in. angle iron, or smaller sizes. The No. 60 angle iron mitre notcher is shown in

the illustration. The No. 61 angle iron bender is not shown.

Each of the units is furnished complete with a stand and a handwheel. The bender not only bends angle iron but by means of special jaws will bend pipes, flats, rounds, tees and other varieties of cross-sections.

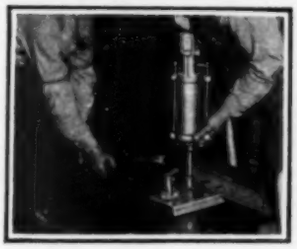
— 163 —

Riveting Hammer Electric

Syntron Co. 400 *Lexington Ave., Pittsburgh, Pa.* [Vol.66, p.435]

This riveting and metal chipping hammer embodies a reciprocating piston actuated by two twin electromagnets energized from a source of alternating current. By means of a simple system of air cooling, it is claimed that the weight has been considerably reduced over former models.

The hammer is readily portable and where d.c. electric power is available a motor-



generator set is supplied. For field work or remote location, a gas-engine-driven power plant mounted either on skids or on a trailer, is available.

The hammer weighs 10 lb. and has a capacity for driving ¾-in. rivets, white hot; ⅞-in. rivets, cherry color; and ⅝-in. flat head rivets, cold.

— 164 —

Burr Cutter, Capscrew, Full-Automatic

Teer-Wickwire & Co., Jackson, Mich. [Vol.66,p.475]

The capscrew burr cutter is fully automatic, and it is said that one unskilled operator can handle eight to ten machines.

The screws are delivered from a hopper to parallel rails, down which they slide. At right angles to the rails is a reciprocating slide carrying the cutting tool, a gripping jaw and a feeding finger. The gripping jaw clamps the body of the screw and holds it rigidly while the cutting edge of the tool

passes over the head and shears off the burr flush with the top.

The drive of the machine is by belt to tight and loose pulleys. Motor driven can also be furnished. The standard machine will accommodate screws with body diameters ranging from ¼ to ⅝ in., inclusive, and up to 5 in. in length. It is claimed that the machine can handle 6,000 capscrews per hr. It can also be used for other automatic parts that can be picked up by the head.

The machine occupies a floor space of 50x45 in. and weighs about 1,500 lb. All parts subject to wear are hardened.

— 165 —

Reaming Machine

Blanchard Machine Co., 64 State St., Cambridge, Mass. [Vol.66,p.715]

This machine is for the hand reaming of holes from 1 to 3 in. in diam. and is applicable to work of any size that can easily be handled.

The reamer is held vertical by means of a Cushman two-jaw chuck and is rotated at either 21 or 38 r.p.m. The work being reamed is held in the hand or by a suitable wrench. Heavy pieces, or those having much weight on one side, may be counterbalanced by a spring or by a cord and counterweight.

Ordinary hand reamers may be used in the machine. Power is supplied by a 1½ hp. motor

mounted in the base. Starting and stopping control and overload protection are furnished by a switch mounted on the base.

The machine occupies a floor space of 36x27 in. The net weight with a.c. motor is 750 lb. and with d.c. motor 820 pounds.

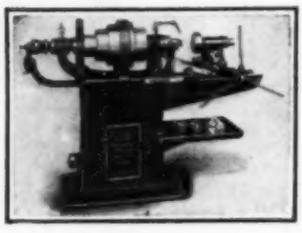
— 166 —

Nut-Facing Machine, Victor

Pawtucket Manufacturing Co., Pawtucket, R. I. [Vol.66, p.912]

Nuts are faced on a hardened, threaded mandrel fitted with an equalizing collar, which insures that they will be faced true to thread. It is claimed that the average operator can face from 600 to 700 nuts, ⅜- to ⅝-in., per hr., and other sizes in proportion.

The machines are made with either belt or motor drive. The



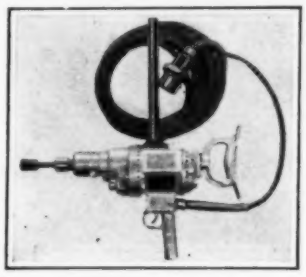
No. 1 machine will face ¾ to 2-in. nuts, and the No. 2 machine will handle 1 to 3-in. nuts. Both machines have the same dimensions, which are as follows: Height over all, 48 in.; height to center of spindle, 8¾ in.; floor space 3x6 ft. The net weight of the No. 1 machine is 1,300 lb. and that of the No. 2 machine is 1,400 pounds.

— 167 —

Electric Tools, High-Cycle

Black & Decker Manufacturing Co., Towson, Md. [Vol. 66,p.1109]

This line of "superpower" electric tools is driven by 3-phase, squirrel-cage motors operating on 180-cycle current. It is said that the absence of commutators and brushes eliminates the source of most frequent trouble on this type of



tool. The rotor is made up of copper bars riveted in place in the laminations and welded.

It is possible to get more power per pound in the high-cycle tools than in the universal motor tools. This type of motor also maintains its speed under load.

The supply of current must be furnished by either a frequency changer or a high-frequency alternator. A complete line of drills, grinders, socket wrenches, and screw drivers is offered.

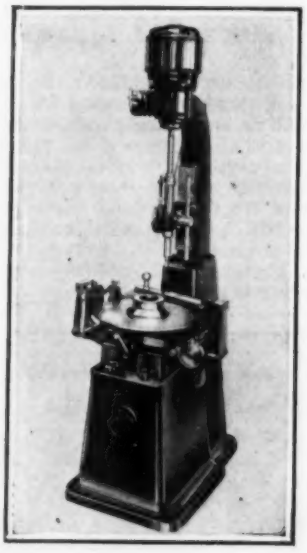
Measuring, Gaging and Testing Machines

— 168 —

Balancing Machine, Static

Gisholt Machine Co., Madison, Wis. [Vol.66,p.557]

This machine is for statically balancing flywheels, clutches, automobile wheels, wheel parts, pump impellers and other narrow-faced parts up to 18 in. in diam., weighing less than 150 lb. It operates by a simple process and shows the amount and location of the correction required to place the work in static balance. It is an instrument and a tool in one, since it has a self-contained, motor-driven drill spindle.

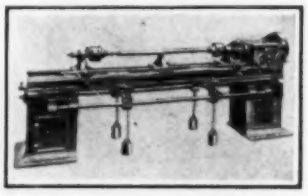


— 169 —

Balancing Machine, Propeller-Shaft

Tinius Olsen Testing Machine Co., 500 N. 12th St., Philadelphia, Pa. [Vol.66,p. 190]

This machine for balancing standard automotive propeller shafts is so arranged that it will indicate on dials in ounce-inches the dynamic unbalance at either end of the shaft, or at the points at which correc-



tion is to be made. It will also indicate the exact angle of such unbalance.

The propeller shafts are held in place by magnetic clutches. It is claimed that such parts can be checked in production at the rate of 150 to 200 shafts per 9-hr. day.

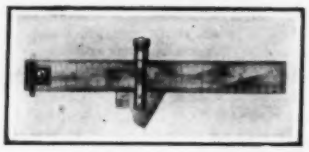
— 170 —

Gage, Drill-Point

L. S. Starrett Co., Athol, Mass. [Vol.66,p.192]

The No. 22-C drill point gage consists of a 6-in. steel rule with a sliding head set at an angle of 59 deg. It is for use in grinding small drills.

By means of the adjustable hooks, it is also possible to set calipers to any of the gradua-



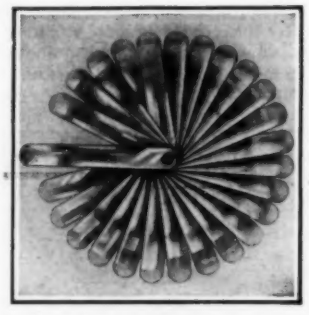
tions. The drill-point gage can be furnished separately for use with the No. 418 hook rule, or Nos. 300 or 800 plain rules.

— 171 —

Gage, Thickness, No. 66

L. S. Starrett Co., Athol, Mass. [Vol.66,p.192]

The No. 66 thickness or "feeler" gage has twenty-six leaves, thus giving it a complete range of thicknesses from 0.0015 to 0.025 in. Four sizes



not ordinarily found are included, namely: 0.0015, 0.002, 0.0025 and 0.003 in. The leaves are 3 1/16 in. long and ½ in. wide.

— 172 —

Straight-Edges, Toolmakers'

L. S. Starrett Co., Athol, Mass. [Vol.66,p.192]

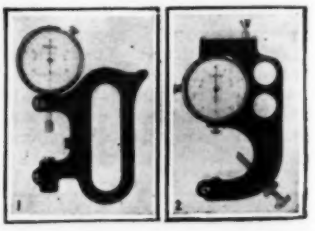
This set of toolmakers' short-length straight-edges consists of six lengths of tempered steel 3/32 in. thick and 19/32 in. wide, with beveled narrow edges. The lengths supplied are ½, ¾, 1, 1¼, 1½ and 2 in. The set is furnished in a neat leather case.

— 173 —

Gages, Thickness, Dial

Federal Products Corporation, Providence, R. I., [Vol. 66,p.720]

Two models of dial thickness gages for measuring cylindrical stock are available. Model No. 264, Fig. 1, is equipped with Model 50 indicator graduated to 0.0005 in. Other models of indicators can be used with the same frame. Fig. 2 shows Model 260 equipped with



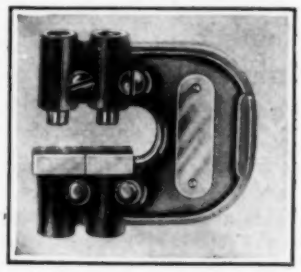
Model 30 indicator graduated to 0.0001 in. The jaws of these gages can be made to take any diameter of stock from 0 to 2 in. Adjustable lower anvils are supplied when the gages are used to measure a variety of sizes.

— 174 —

Gage, Snap, "Rapid Inspection," No. 1616

Greenfield Tap & Die Corporation, Greenfield, Mass. [Vol.66,p.797]

The particular feature of this gage is the solid jaw extending beyond the frame. Upon this projecting surface it is convenient to locate and level the work before moving it to-



ward the actual measuring anvils. It is said that the method of adjusting and locking the anvils has been greatly improved and simplified.

Ten different frame sizes are provided for the handling of work 0 to 6 in. in diameter.

— 175 —

Plastic Wood

Addison-Leslie Co., Canton, Mass. [Vol.66,p.37]

A moldable pulp that handles like putty and hardens into wood is put up in ½ and

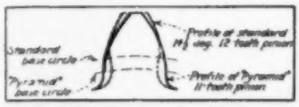
1-lb. cans. It can be pushed into holes and cracks and will adhere to metal, tile, cloth, and glass as well as to wooden surfaces. After hardening it can be carved, planed, sandpapered, and turned on the lathe. It differs from wood only in that it has no grain. Nails and screws will not split the material and it can be finished with paint and varnish the same as wood. Plastic Wood can be used for making repairs on machinery, for pattern work, and for miscellaneous jobs.

— 176 —

Gears, "Pyramid"

Boston Gear Works Sales Co., Norfolk Downs (Quincy), Mass. [Vol.66,p.234]

This line of standardized gears embodies an improved "pyramid" tooth form especially adapted for pinions of 16 teeth or less. They are interchange-


Standard base circle
Profile of standard 14½ deg. 12 tooth pinion
"Pyramid" base circle
Profile of "Pyramid" 11 tooth pinion

able with any standard Boston pinion.

The characteristics of this tooth form are a wide base and the elimination of undercut, ordinarily present in gears having few teeth. A longer working surface is thus available, with resultant increase in life.

— 177 —

Paint for Pipe Joints

General Electric Co., Merchandising Dept., Bridgeport, Conn. [Vol.66,p.573]

This product, known as GE No. 880 red protective paint, is for sealing joints against oil, water, or gas.

This paint, which is dark red in color, requires no priming and can be applied by brushing or dipping. It dries rapidly and produces a hard, smooth glossy film that is easily cleaned.

The paint was developed particularly for use in connection with fuel oil burners.

— 178 —

Tempering Salts, Stewart

Chicago Flexible Shaft Co., 5600 Roosevelt Rd., Chicago, Ill. [Vol.66,p.1033]

Stewart tempering salts are recommended for tempering and drawing steel at temperatures ranging from 300 to 1,000 deg. F. They are claimed to be unburnable, non-poisonous, smokeless and odorless. Any pot type of furnace can be used with the salts.

After the work is removed from the bath, it is only necessary to rinse it in warm water to remove all traces of the salts, as they are readily soluble. The salts are supplied in 50-lb. tins.

— 179 —

Gears, "Forged-Cast"

Hill Clutch Machine & Foundry Co., Breakwater Ave. and W. 65th St., Cleveland, Ohio. [Vol.66,p.1031]

The construction is simply an angular forged steel ring in which is cast a semi-steel hub either with web or arms, depending upon the dimensions. After casting, the completed gear is finish machined, and the teeth cut.

The thickness of the forged steel rim is proportioned to the teeth. Any height of tooth or width of face can be cut. The hubs have both ends faced and are taper keyseated. Gear pin hubs, special bolting lugs and other unusual features can be applied to this type of gear.

— 180 —

Comparator, for Small Internal Diameters, Société Genevoise

R. Y. Ferner Co., Investment Bldg., Washington, D. C. [Vol. 66,p.389]

The comparator has been designed by the Société Genevoise d'Instruments de Physique of Geneva, Switzerland, for use in measuring internal diameters of a small size. It is being marketed in this country by the above company. The comparator tube or indicator, which has a knife-edge multiplication system, is standard, while the support is of special design for handling this kind of work.

The instrument can be furnished to read in either metric

or inch units, and while it was originally designed for rings varying from 4 to 6 mm. in diam. (0.16 to 0.24 in.) it can, with slight modifications, be constructed for the measurement of larger rings. Accurate comparison gages can be supplied when desired.

The support includes a small rectangular table on which the piece to be tested is placed, and from this table two contact points project. The gage is first adjusted to zero by means of a standard ring gage, and any variation in the size of rings is detected on the dial.

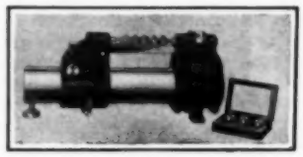
— 181 —

Super-Micrometer, Model B

Pratt & Whitney Co., Division Niles-Bement-Pond Co., Hartford, Conn. [Vol.66,p.552]

In the improved supermicrometer, series B, the head has been redesigned in order to inclose the moving parts and thus eliminate excessive wear. The tailstock has been made stiffer and heavier, and its outlines have been made symmetrical with the headstock.

The graduations on the dial and vernier are about one tenth of an inch apart instead of a



fiftieth of an inch as formerly. The calibration remains the same, namely, 0.0001 in. per graduation. The dial is much smaller, and is provided with a small knurled portion on the right that serves as a fingerhold and obviates the necessity of handling the graduated portion.

Eight Standard Inch disks are supplied with each machine. The machine has a range of 8 in. between anvils and the measuring spindle has a working range of ½ in. with overtravel in each direction.

— 182 —

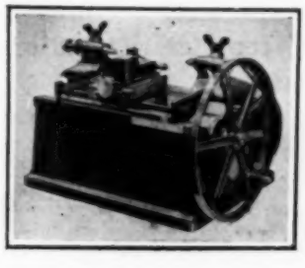
Pitch-Measuring Machine, Société Genevoise

R. Y. Ferner Co., Investment Building, Washington, D. C. [Vol.66,p.752]

The Société Genevoise d'Instruments de Physique of Geneva, Switzerland, has put on the market an apparatus for measuring the pitch of screw threads. The American agent is given above.

This machine is adapted for the measurement of both internal and external threads and will hold plug gages up to 6 in. in diam. and 8 in. in length.

The apparatus consists of a bed with ways on which two adjustable supports for the thread gage are mounted and a



micrometer slide mounted on separate ways and controlled by an accurate screw. The screw carries a large drum with divisions corresponding to 0.00005 in., the guaranteed accuracy of the machine.

The micrometer slide actuated by this lead screw carries an amplifier in which various measuring anvils may be mounted. The thread gage is held firmly between centers during these measurements without axial play or rotation. An ingenious device is used for compensating for the errors of the micrometer screw.

For measurement of the pitch of internal threads the thread ring gage to be tested is mounted on a faceplate.

— 183 —

Measuring Instruments, Comtor

Comtor Co., Box 215, Waltham, Mass. [Vol.66,p.795]

An interchangeable system of diameter control has been perfected for use in speeding up production in measuring and checking.

All instruments are of the automatic spring-operation type,

which gives a uniform pressure. They are made of special tool steel, hardened, tempered, seasoned, lapped and light-wave tested.

The Comtorgage, Type O, shown is for use in measuring outside diameters, and in grinding operations it may be held on the revolving work. This gage is also supplied with special anvils for measuring the diameter at a fixed point on a taper.

For measuring holes under 2 in. in diam., a Comtorplug is used. It consists of different sizes of interchangeable expansion plugs fitting an amplifier casing.

The Comtorslide has jaws that are adjustable on a bar onto standards. A small and comparatively cheap set of precision gage blocks, known as Comtorblocks, are supplied in basic sizes in steps of sixteenths of an inch, and a Comtorbox is used to hold these gages.

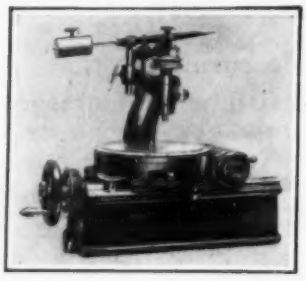
The Comtor stand is a convenient device for supporting cylindrical reference standards so that they are not distorted by bodily heat due to handling.

— 184 —

Measuring and Drilling Machine, Combined, Société Genevoise

R. Y. Ferner Co., Investment Bldg., Washington, D. C. [Vol. 66,p.1112]

This machine, marketed by the above company, has been built by the Société Genevoise d'Instruments de Physique of Geneva, Switzerland, for combining accurate measurement with facilities for drilling and boring of holes in master plates or parts of small machines and instruments. Primarily it is a machine for measurements in



polar co-ordinates in that the slide has a circular table with which angular measurements may be made to 30 sec. of arc. By means of a table lead screw measurements of length over a range of 4 in. may be made.

A microscope magnifying twenty-seven times is used for making the readings. It is mounted in the main arm of the machine in which the drilling unit can also be mounted.

The table is held under spring tension against the nut on the micrometer screw. The large micrometer drum is graduated into 500 divisions and errors are automatically compensated.

A wormscrew also controls the rotation of the circular table and is fitted with a micrometer drum. On the table is twenty-one tapped holes for use in attaching workpieces.

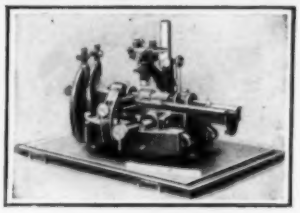
The boring headstock is adjustable in height and has a sensitive hand feed. The spindle is driven by a round belt and has a capacity for boring holes up to 0.175 in. in diam. The unit weighs 140 lb. net.

— 185 —

Microscope, Measuring, Universal, Zeiss

George Scherr Co., 142 Liberty St., New York, N. Y. [Vol.66,p.913]

The Carl Zeiss universal measuring microscope shown is for particular use in measuring screw threads. As in the Zeiss screw-thread comparator, the knife-edge method has been in-



corporated in this instrument. The hair lines in the microscope are set by fine lines engraved on the knife edges at a given distance from and parallel with the edges.

Accurate glass scales in combination with an improved type of spiral occular are used for measuring. Measurements can be estimated to 1/100,000 inch.

On a massive bed with column is arranged a cross-carriage which floats in both directions on balls. The cross-movement serves for measuring the diameters, the longitudinal movement, the lead. Angular measurements are obtained with the universal protractor eye-piece, or a revolving-type templet.

The microscope bracket can be swung around the column, thus bringing a spotting attachment into line.

— 186 —

Microscope, Universal

E. Leitz, Inc., 60 E. 10th St., New York, N. Y. [Vol.66,p.997]

This microscope is made by the Leitz Works, Wetzler, Germany. It can be used for biological and mineralogical investi-

gation as well as the investigation of opaque specimens, such as metals, with reflected light. The instrument is shown with a monocular tube for mineralogical investigation with polarized reflected light. It can also be arranged for use with ordinary reflected light and with a binocular tube.

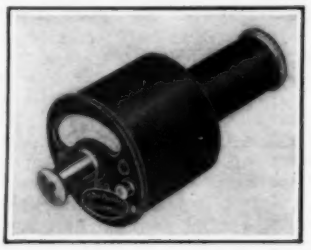
— 187 —

Pyrometer, Radiation, "Pyro"

Pyrometer Instrument Co., 74 Reade St., New York, N. Y. [Vol.66,p.192]

The "Pyro" radiation pyrometer receives a predetermined portion of the total radiant energy emitted by hot bodies and causes a measureable force to be developed in a sensitive element and measured by a galvanometer.

A clear quartz lens is used to concentrate the rays on the element, which consists of an extremely thin wire attached to a thicker supporting wire with a receiving disk fixed over the joint for better receptivity. The whole couple is mounted in an evacuated glass bulb and is supported in the axis of the optical system. The very small mass of the thermocouple is said to



result in two important advantages; namely, speedy response to temperature variation and development of higher electric forces. It is claimed that a single reading can be taken in 2½ to 3 seconds.

The instrument is of the fixed-focus type. The distance of the instrument from the aperture may be as great as 24 to 30 times the diameter of the aperture, depending on the temperature range.

Sliding adjustment of the eyepiece brings the hot body sighted on it clearly into view. The millivoltmeter, thermocouple, and optical system are incorporated in a single unit, which is readily portable.

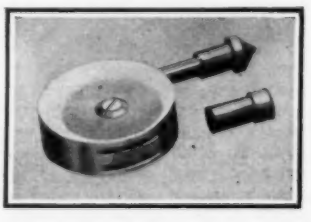
— 188 —

Speed Indicator, No. 746, Vest-Pocket

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.66,p.231]

The No. 746 speed indicator is said to be simple in construction, since it has only four major parts, all of rugged construction.

The indicator shaft embodies a worm thread that engages a rotating drum having graduations from 1 to 100 on its periphery. The drum carries on its face a knob that engages during each revolution a depression in a flexible steel disk on the side of the instrument. The operator places his thumb di-



rectly on the small dent on the steel plate and every hundred revolutions the steel plate lifts beneath his thumb as if breathing. It is only necessary, therefore, to count the number of lifts for one minute and then multiply by 100. To this is added the number of units that appear on the slot at the top of the device.

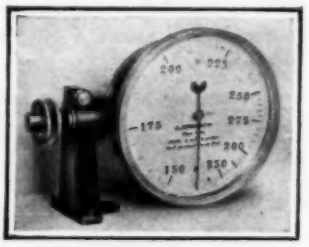
— 189 —

Tachometers, Stationary, O-Z

O. Zernickow Co., 16 Park Row, New York, N. Y. [Vol. 66,p.560]

Two models of O-Z stationary tachometers are available. Model A, illustrated, has the hand mounted in the center of a circular graduation and is recommended for normal conditions. Model B, which has the hand mounted below the center and a semi-circular graduation, is especially made for rough usage and violent fluctuations.

Each instrument has a dial 6 in. in diam. and a housing



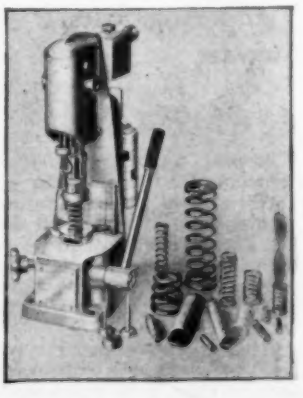
2¾ in. deep. The net weight with bracket is 2¾ lb. The operating principle is similar to the centrifugal pendulum principle embodied in the O-Z hand tachometers already on the market.

— 190 —

"Elasticometer"

Coats Machine Tool Co., Inc., 110 W. 40th St., New York, N. Y. [Vol.66,p.996]

The "Elasticometer" is a spring testing machine of English design and can be furnished to read in either pounds and inches or in kilograms and mil-



limeters. The design principle is essentially a precision beam balance. It is composed of three units, levers, connecting links and the main body.

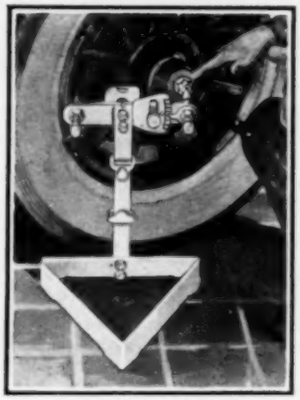
This machine will test compression springs ¼ to 6 in. in length and ⅛ to 2½ in. in diam., and 6 to 8½ in. in length and from ⅛ to ⅞ in. in diam. It will test tension springs ¼ to 5 in. in length and ⅛ to 6 in. in diam., and from 5 to 8 in. in length and ⅛ to 1¼ in. in diam. The load can be varied from 2½ grs. to 150 lb. The complete machine weighs about 50 lb. net.

— 191 —

Instruments for Checking Automobile Wheels

Bear Manufacturing Co., Rock Island, Ill. [Vol.66,p.1035]

The axle gage shown is for determining the castor of the front axle to insure proper wheel alignment. It operates on the principle that the arc of a circle described by the end of the wheel spindle lies in a plane parallel to the top of the axle. The gage pointer is placed in



the spindle center and the dial is graduated to read direct to degrees of tilt. The instrument will work on all models, and a chart is provided showing the manufacturer's specifications.

The wheel aligner, not shown, is used to check both the pitch (dish) and toe-in of front wheels and the alignment of rear wheels. It is also said to detect faulty wheels, spindles, bolts, bushings, tirerods and axles. The device is held in position by a compression spring and hence will support itself there, while corrections are being made.

Material Handling

— 192 —

Hoists, Electric

The Sprague Electric Hoist Division of the Shepard Electric Crane and Hoist Co., 30 Church St., New York, N. Y. [Vol.66,p.548]

The General Electric Co. announces the sale of the rights on the Sprague electric hoist and winch products to the Shepard Electric Crane and Hoist Co. of Montour Falls, N. Y. This line includes the Sprague worm-gear electric hoists and trolleys in capacities from ¼ to 6 tons, spur-gear winches in capacities from 1 to 6 tons, and repair parts for all types of Sprague hoists, trolleys and winches.

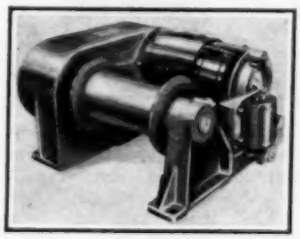
— 193 —

Hoist, Stationary, "Lo-Hed"

American Engineering Co., Philadelphia, Pa. [Vol.66,p.637]

The stationary "Lo-Hed" hoist is for use either overhead or on the ground, mounted in a fixed position.

The standard machine consists of a smooth drum, driven by a motor through spur gears that run in a bath of oil. All gear shafts run in Hyatt roller bearings. A fully-inclosed, ball-bearing motor is used, either



a.c. or d.c. The controller is of the single-speed reversing drum type.

Various modifications in the hoist can be supplied, such as grooved drums, air or steam drive, push-button and remote control, holding and lowering brakes, and extension shafts with additional heads. The unit is furnished in sizes for handling 500 to 4,500-lb. loads.

— 194 —

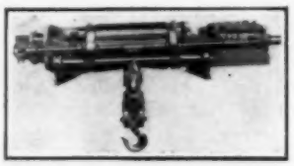
Crane Trolley, Standard Type, Improved

Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. [Vol.66,p.914]

The load-carrying frame of the improved trolley is of all-steel construction, consisting of box-like sections and is carried by axle brackets made from heavy seamless, drawn-steel tubes. The longer winding drum of the improved trolley permits grooving of a coarser pitch for a given size rope.

The frame of the crane motor may be bolted to an adapter ring or the base may be bolted to a horizontal shelf. The trolley motor may be mounted in similar fashion and any type of motor may be used.

The sectional construction of these crane trolleys permits each one to be built up of units suitable for the service intended.



Steel-plate and angle construction of the body portion of the hoist frame, and axle brackets of steel tubing, permit special dimensions, when necessary. Seven distinct types of crane trolleys are available.

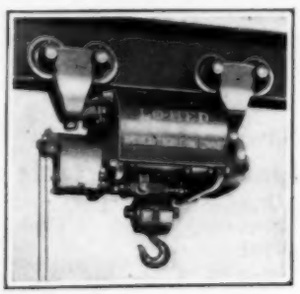
— 195 —

Hoist, Monorail Electric "Lo-Hed"

American Engineering Co., Philadelphia, Pa. [Vol.66, p.1106]

This "Lo-Hed" motor trolley electric monorail hoist operates in 15¼ in. headroom. It is built in half-ton and ton sizes and is mounted on an 8-wheel trolley.

It is designed for operation with alternating current at 20 ft. per min. or direct current at 20 to 40 ft. per min. A special



high speed hoist can be provided for operation at double these speeds. The standard height of lift is 20 ft. Four ropes are used.

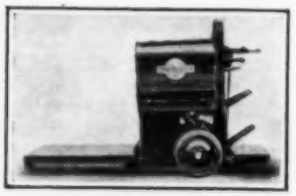
A fully-inclosed ball-bearing motor especially designed for this service is used. Hyatt bearings are used on the gear shafts and in the trolley wheels. Holding and lowering brakes give full control of the hoist.

— 196 —

Electric Truck, "Star"

Crescent Truck Co., Lebanon, Pa. [Vol.66,p.600]

This small, low-priced electric truck is for use in congested plants with narrow



passageways. It has an overall width of 30 in. and an overall length of 82 in. It was developed for use with 7-in. hand-lift truck skids, and it has a capacity of approximately 3,500 lb. Its weight with a 9-plate battery is about 1,525 pounds.

The drive of the truck is by a 24-volt d.c. motor through a worm-gear reduction unit. The speed is from 4 to 5 mi. per hr. when loaded. The truck has a turning radius of 7½ ft. With the patented lifting mechanism a man weighing 135 lb. can lift approximately 3,500 pounds.

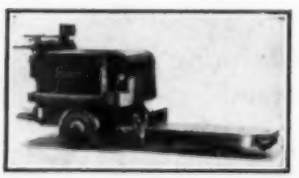
— 197 —

Elevating Truck with Chain Lift

Baker-Raulang Co., Cleveland, Ohio. [Vol.66,p.952]

In this Series D elevating truck, the underside of the platform is fitted with four steel inclines that run against hardened steel rollers pinned to the truck underframe. The platform is pulled up these inclines by two roller chains.

The lifting mechanism is driven by a compound-wound motor operating through a



triple spur-gear reduction and a double set of planetary gears. A series-type vehicle motor drives two 20-in. wheels through a wormwheel reduction and a double-gear differential.

The frame is entirely fabricated from structural steel. Most parts of the truck are Baker standardized units.

The series D elevating trucks are built in several types among which are the following: A standard 3-ton model, a 7-in. type for low skids, a dock type with platform 7 in. high, a 5-ton truck with elevating platform and a 10-ton truck.

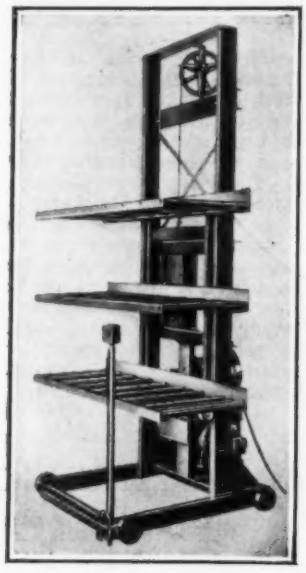
— 198 —

Stacker with Roller Conveyor

Lewis-Shepard Co., Watertown Station, Boston, Mass. [Vol.66,p.997]

The platform of this stacker is equipped with rollers similar to those used on conveyors. The

device can be used for bridging gaps to various levels of the conveyor system, elevating or lowering materials to and from the conveyor. The three platforms move simultaneously. Specifications of the machine



can be altered to suit individual requirements.

The stacker can be powered with motors ranging from ½ to 3 hp. The drive is by means of an inclosed worm and wheel running in oil.

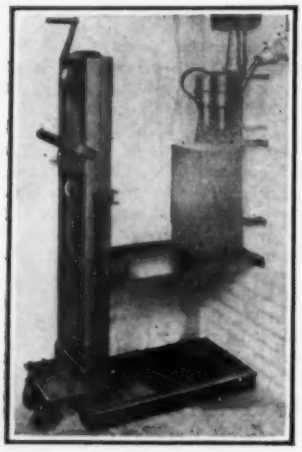
The unit is portable and is constructed of arc-welded structural steel.

— 199 —

Elevating Device, Hand-Power

Lewis-Shepard Co., Watertown Station, Boston, Mass. [Vol.66,p.1032]

The small hand power elevating machine shown has been made for use in elevating heavy appliances, such as a controller,



in the position it will occupy on the wall. While held in this position the part can readily be attached. The unit is of standard angle iron construction.

Woodworking Machinery

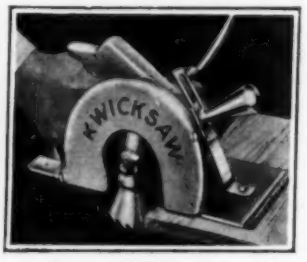
— 200 —

"Kwicksaw"

Porter-Cable Machine Co., Syracuse, N. Y. [Vol. 66,p.174]

This light-type electrically-driven handsaw revolves at a high speed and is said to leave a smooth edge, often making planing unnecessary.

The blade is mounted direct on the motor armature, which revolves on ball bearings. The



tool weighs 10 lb. and can be easily operated by one hand. A wide supporting shoe carries the weight of the tool and assures a square cut. The hinged supporting shoe can be set for any depth of cut up to 2 inches.

The saw will withstand weather conditions as most parts are made of aluminium and duralumin. The motor is self ventilated and the intake is screened. Standard equipment consists of 10 ft. of rubber-covered cable, an armored duplex plug, and one 7-in. combination saw. Either a 110- or 220-volt d.c. or 25 to 60-cycle a.c. motor can be supplied.

— 201 —

Sawing Machine, Link-Type, Portable

Reed-Prentice Corporation, Worcester, Mass. [Vol.66, p.796]

The Wolf portable link-type sawing machine is driven by a single motor capable of developing 2 hp., intermittently. It has a capacity for cutting work 25 in. in diam. It can also be furnished with two motors of the same power with a capacity of work 30 in. in diam., or with a single motor developing 3½ hp. intermittently.

This machine is regularly supplied with motors operating on 220-volt, 60-cycle, 3-phase alternating current, or from a portable motor-driven generator set. The motor is inclosed in a

dust-proof housing, and all journals are supplied with double-row ball bearings.

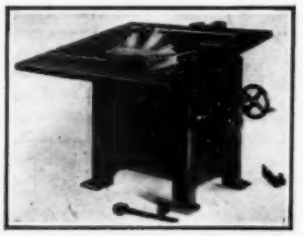
The frame is made of four pieces of selected saw steel, and the filler piece forms a channel around the edge of the frame that the saw links travel in. The saw links are made of individual pieces, consisting of rake and cutter links, link-pin and bushing. The action of the saw link is the same as that of a rigid saw and buckling is said to be eliminated.

— 202 —

Saw Table

Colladay Machine Works, Hope & Venango Sts., Philadelphia, Pa. [Vol.66,p.956]

The saw table is especially designed for use in pattern shops and shipping departments. Mounted inside the base on a vertical sliding knee, is a 5-hp. motor, the shaft of which forms the saw arbor. This arbor is made of special alloy steel and



is carried on ball bearings. By means of a handwheel the knee and hence the saw, can be raised and lowered.

The table can be turned through 45 deg. and locked in position. The table top is 42 in. long and 39 in. wide, and is provided with two cross-cut adjustable miter gages. An adjustable rip fence takes boards up to 17 in. wide. The machine will take a saw blade with a maximum diameter of 18 in., and a maximum projection through the table of 5⅛ inches.

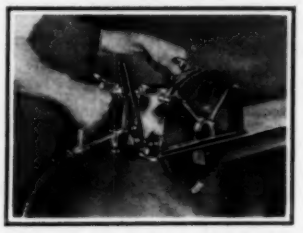
— 203 —

Saw, Electric, Portable

Syntron Co., Lexington Ave., Pittsburgh, Pa. [Vol.66,p.993]

The portable electric saw is designed to rip 2-in. oak planks at the rate of 420 sq.in. per min., or to cross-cut a 3-in. oak plank at the rate of 300 sq.in. per min. With a saw blade 11 in. in diam. it will cut a plank of 4 in. maximum thickness. It will also cut various composition materials and soft metals.

The saw is completely inclosed at all times by a telescopic guard. The shoe is made from a heat-treated aluminum alloy and is large enough to prevent the saw blade from weaving.



The saw is driven by means of a universal electric motor on either 110 or 220 volts. The drive is through a worm and wheel, and Timken tapered roller bearings are used throughout.

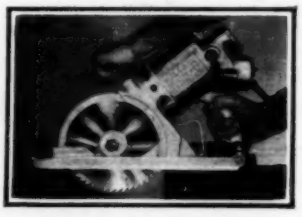
The overall dimensions of the machine are 22x12x7 in. The net weight is 31 pounds.

— 204 —

Handsaw, Electric

J. D. Wallace & Co., 134 California Ave., Chicago, Ill. [Vol.66,p.1031]

The universal type of motor supplied makes it possible to use the handsaw on either direct current or alternating current of any frequency. A standard



round-hole blade 8 in. in diam. is used. Ball bearings are used throughout, all the same size.

The saw guard is ordinarily locked in position, and is released by a trigger. When the cut is finished and the saw lifted from the work, the safety guard automatically drops back into the locked position.

The design of the saw in general is compact and convenient. A splitter follows the saw blade and helps guide the machine.

— 205 —

Jointer, Ball-Bearing, 12-Inch, "Monarch"

American Saw Mill Machinery Co., Hackettstown, N. J. [Vol.66,p.474]

The "Monarch" 12-in. ball-bearing jointer is regularly furnished as follows: with ball bearings and motor on the head; with ball bearings and pulley for belt drive; with babbitted bearings and pulley for belt drive.

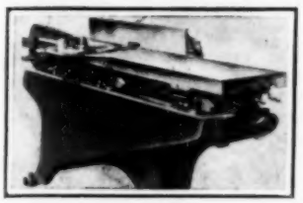
The frame is cast in one piece with two separable tables. The in-feeding table may be tilted for use in pattern draft work.

The safety guard covers the head close up to the work, or it can be held open by means of a latch or thrown out of the way entirely.

The motor head is mounted

in a heavy yoke. The head itself is made of solid forged steel 5 in. in diam, and is fitted with three high-speed knives. The motor is self-ventilated and is fully protected.

Provision is made for connecting the machine to the fac-



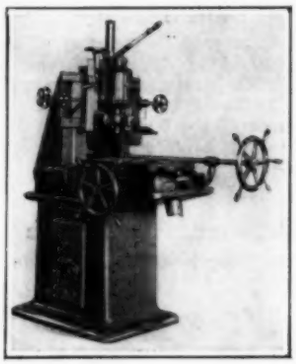
tory exhaust system or a self-contained exhaust fan can be specified. The extreme length of the machine is 89 in. while the extreme width over the motor and rabbetting arm is 38 in. The machine weighs about 1,600 pounds.

— 206 —

Profiling Machine

Frew Machine Co., 124 W. Venango St., Philadelphia, Pa. [Vol.66,p.275]

The machine is designed to perform profiling operations on wood or similar material where a high spindle speed is required. The standard spindle speed is 3,500 r.p.m., but the speed can



be increased to 7,000 r.p.m. through the use of a frequency changer. The spindle is carried in ball bearings.

The movement of the table and of the cross-slide are controlled by handwheels. The machine is rigidly constructed throughout, and where necessary gears and racks are split, with adjustment for taking up backlash.

The working surface of the table measures 12x15½ in., and the table travel is 15½ in. The movement of the cross-slide is 13 in. and the distance from the table to the cross-slide is 5½ inches.

This machine is also built for metal working, with pulley drive, or motor drive through spiral bevel gearing.

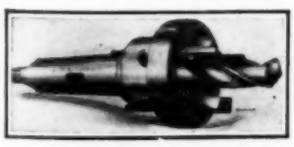
Small Tools

— 207 —

Tool, Trepanning

W. L. Brubaker & Bros. Co., 50 Church St., New York, N. Y. [Vol.66,p.36]

This special trepanning tool for cutting holes 3 in. in diam. and larger in flue sheets, combines a standard drill, with a Morse taper shank, with special tools for trepanning and chamfering. No radial adjustment is provided, but both the tre-



panning and chamfering cutters may be adjusted longitudinally to maintain the proper lengths after grinding. This adjustment permits the maximum use of the cutters, which are made of high-speed steel to assure long life.

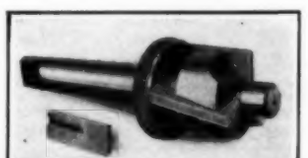
Only one set-up is made for several operations. It is claimed that accurate holes are obtained due to the rigid support of the cutter. The tool may be quickly taken apart or assembled.

— 208 —

Facing Tool, Style R

Genesee Manufacturing Co., Inc., Rochester, N. Y. [Vol.66, p.193]

The Style R facing tool is for use in spot facing, finishing bevels, grooving and forming. The main body is one piece of



heat-treated chrome-nickel steel. The pilots are interchangeable.

The blades are held in place by means of offset bushings and are set with a cutting rake of 12 deg. The same speeds and feeds as a drill of similar size are used. The blades can be taken out for regrinding without removing the tool from the arbor. Three blades are normally furnished but a two-bladed tool can be obtained for heavy roughing cuts.

These tools can be obtained in sizes from 1½ to 4 inch.

— 209 —

Cutting-Off Tool, Spring

Armstrong Bros. Tool Co., 317 N. Francisco Ave., Chicago, Ill. [Vol.66,p.354]

These spring cutting-off tools are made in both straight-shank and right-hand offset styles. The body is a forging made in

the form of a goose neck in order to give the cutter resiliency to take up any chatter and to keep the work from climbing up on the tool.

The cutter is beveled on both sides and is held at an angle to give the necessary side clearance and top rake.

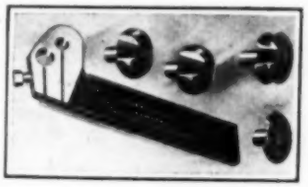
Both styles are made in four sizes with cutters ranging from $\frac{5}{32}$x$\frac{5}{8}$ in. to $\frac{5}{16}$x1 inches.

— 210 —

Radius Tool, Lathe and Planer

Sloan & Chace, Inc., 351 Sixth Ave., Newark, N. J. [Vol.66,p.575]

The set of circular radius tools and holder, for use on lathes or planers, consists of a patented tool-steel holder with



a standard shank, fifteen tool-steel convex cutters for forming arcs ranging from $\frac{1}{16}$ to 1 in. in diameter, one cutting-off tool, and one 60-deg. threading tool.

The cutters can easily be ground and will last a long time. Each cutter has a round stub shank that fits in a corresponding hole in the holder, which is slit to afford a clamp for the tool. These cutters were formerly made by the R. G. Smith Tool & Manufacturing Co. of Newark.

— 211 —

Boring and Facing Tools

O. K. Tool Co., Shelton, Conn. [Vol.66,p.951]

All of the tools are made with the regular serrated-back type of inserted blades by means

of which the original diameter of the tool may be restored by removing each blade and replacing it in the next succeeding position in the holder.

The trepanning tool shown is made in two main parts: the shank and driving plate is a single forging to which the body of the cutting tool is attached. The driving strain is taken by radial keys. While all of the blades cut upon their ends, alternate blades cut upon their outside and inside edges, respectively.

Two types of multiple boring tools adapted to the counterboring of recessed holes of two or more diameters have also been developed. The same principle of holding the blades has been applied to a hollow mill.

Other tools include facing heads with the serrations of the blades and holders disposed longitudinally, so that the blades are set out from the body in a direction parallel with the axis of the tool.

In all of the tools the cutting blades are made of high-speed steel and the bodies of heat-treated chrome-nickel alloy. The minimum diameter in each case is about 1½ in. and the maximum any reasonable diameter.

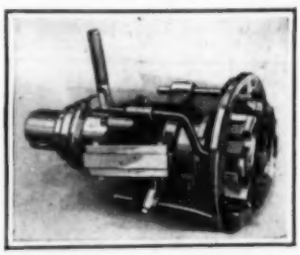
— 212 —

Tap, Collapsible, Receding-Chaser, Style M, Victor

Landis Machine Co., Waynesboro, Pa. [Vol.66,p.719]

The Victor Style M receding-chaser collapsible tap is for cutting tapered threads in tool joints, casing shoes, pipe couplings, flanges, valve bodies, and fittings. It is made in three groups, each employing one body with a series of detachable heads in each group.

Group I, known as the No. 4M body, cuts threads from 4½ to 5¾ in., outside diam.; group



II, known as No. 6M body, will cut threads ranging from 6½ to 13⅝ in. outside diam.; while group III, known as No. 14M body, will cut threads ranging from 13⅝ to 24½ in. outside diameter.

The style M tap is regularly furnished for cutting tapers of ⅜ and ½ in. per ft. or any combination of the two. An adjustment of approximately ¼ in. either over- or under-size can be obtained on each head.

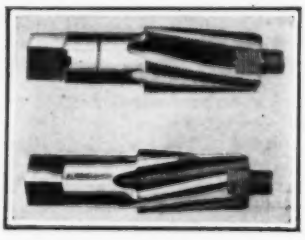
The taps can be used as either rotary or stationary taps and can be fitted with standard shanks or with driving flanges for bolting to the spindle of a machine.

— 213 —

Tap and Reamer, Staybolt, Flexible

W. L. Brubaker & Bros. Co., 50 Church St., New York, N. Y. [Vol.66,p.757]

In place of making the pilot screw a solid part of the tool, these taps and reamers are made with a U. S. Standard threaded hole in which is in-



serted an unhardened adapter stud with its outer end threaded with a standard pipe thread for use with the usual extension.

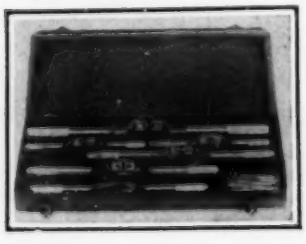
It is claimed that the unhardened pilot screws are not brittle and consequently are less liable to break than those tempered with the tool.

— 214 —

Screw Plates, "Pee Dee Que"

Wells Tap and Die Co., 107 Hope St., Greenfield, Mass. [Vol.66,p.235]

Two sets of "Pee Dee Que" screw plates are offered; Set No. 50 illustrated, will cut five sizes of threads ¼, 5/16, ⅜, 7/16, ½ in., while set No. 60 will cut seven sizes, the sizes just mentioned and ⅝ and ¾ in. All sets have tapered taps, patent bevel



dies, multiple stocks and an adjustable tap wrench. Each set is packed in an all-steel box.

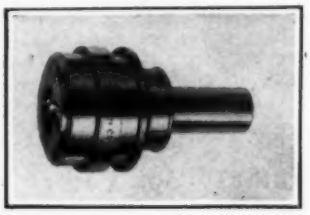
A stock is furnished for every size of die. The die is of convenient length for fast and accurate work. The adjustable bevel dies are made in two pieces from drop-forged special-analysis tool steel. They have large chip room and ample oil cavities.

— 215 —

Diehead, Self-Opening, Type CO

Murchey Machine & Tool Co., Detroit, Mich. [Vol.66, p.351]

The type CO diehead is for use on any machine where the diehead is revolved. The outstanding feature of this device is the collar trip which makes



it especially adaptable to shoulder threading and insures a precise length of thread.

All parts are hardened and ground. The action is said to be positive and uniformly the same with no tendency toward binding. The chasers may be removed without taking off the cap of the diehead and without removing it from the spindle.

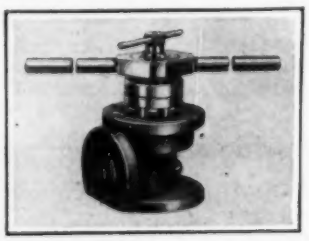
These dieheads are made in 7/16, 9/16, 1, 1¼ and 1½ in. sizes. The chasers are interchangeable with those of the type O series of dieheads.

— 216 —

Reamer, Valve, Special

Foster-Johnson Reamer Co., Elkhart, Ind. [Vol.66,p.236]

This special reamer is for refinishing worn bushings in triple valve bodies of Westinghouse types PL, New York type PL and all K types. The range of



expansion is slightly under 3½ to 3 9/16 in., so that the tool can be ground a large number of times before it becomes useless.

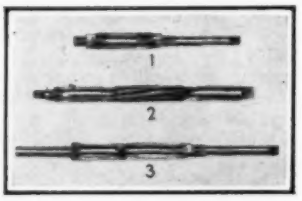
The adjusting nut is graduated to read the amount of expansion in half thousandths. The blades are expanded parallel after being inserted to the full depth of the bushing.

— 217 —

Reamer, Adjustable

Watervliet Tool Co., Inc., Albany, N. Y. [Vol.66,p.351]

Three lines of adjustable reamers for use with piston pin bearings of automobiles and trucks are available. The diagonal adjustable reamer without pilots is shown in Fig. 1. The blades are set at an angle



to give them the same shearing effect as in a spirally-fluted expansion tool.

Each reamer expands a full 1/16 in., so that all sizer overlap. The blades are made of special tungsten steel. The diagonal adjustable reamers are made in eleven sizes, from ½ to 1 7/32 in., inclusive.

The spiral expansion reamer shown in Fig. 2 is especially designed for piston-pin bushings. The tool both bores and reams, the first function being performed by the self-cutting pilot.

The diagonal adjustable aligning reamer shown in Fig. 3 has both front and rear guiding pilots of the spring collet type. It is made in fourteen sizes with a range of expansion from ½ to 1 7/32 in., inclusive.

— 218 —

Strap Clamp, Adjustable

Billings & Spencer Co., Hartford, Conn. [Vol.66,p.390]

The adjustable strap clamp is designed for holding work on planers, boring mills, drill

presses, faceplates of lathes, and milling machines.

Its design permits its use on irregular shapes of various sizes without washers and shims. The clamp has only two working parts and is used in connection with a tie-bolt.

The device is hardened in oil and is furnished in its natural finish. It is made in three sizes.

— 219 —

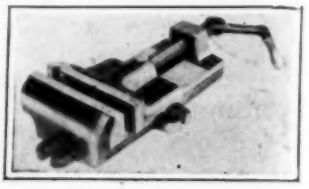
Vise, Machine, Improved

Brown Bros. Machine Co., 815 E. 93rd St., Cleveland, Ohio. [Vol.66,p.953]

The body and jaws of the vise are made of tough gray cast iron, while the square-thread screw is of machine steel, and the pivoted handle of cast steel.

The top, bottom and sides have been machined after assembly so that the vise can be used for set-ups when bolted in place. It has broad bearing slides and gripping surfaces.

A feature of the device is the pair of milled V-slots set vertical with the jaws. Shafts and



round bars up to 1 in. in diam. and several feet in length can be handled.

Three lugs are provided. The overall length of the vise is 17½ in., the width 7 in. and the jaw opening 4 in. The approximate weight is 25 pounds.

— 220 —

Magnetic Chuck, "Superpower"

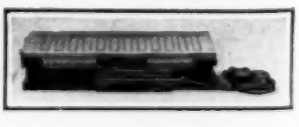
Taft-Peirce Manufacturing Co., Woonsocket, R. I. [Vol. 66,p.1072]

The faceplate comprises a shell inclosing a series of magnetic cores energized by individual coils. The method of construction used is such that a strong and rugged chuck results affording a large magnetic area with a minimum of height. Particular pains were taken to make the unit waterproof.

The coils were specifically developed for this class of service and are said to be able to withstand the large voltages induced at demagnetization, and will also permit operation over a wide range of normal voltage. Every coil is thoroughly impregnated with high-grade insulating varnish, baked on.

An improved type of demagnetizing switch has been developed for this series of chuck and is furnished as standard equipment with the smaller sizes.

The density of the magnetic flux, as well as its distribution



with respect to the working surfaces, enables small pieces of work to be held securely to a thin sheet of steel placed on top of the standard faceplates. By this method the work may be distributed without regard to the pole pieces.

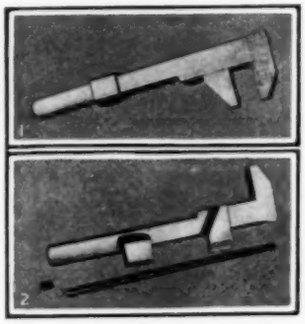
— 221 —

Wrench, Quick-Acting

H & E Wrench Co., New Bedford, Mass. [Vol.66,p.191]

The advantage claimed for this wrench is that the adjustment to fit any size nut within the range of the tool can be made instantly and accurately.

All parts are made of alloy steel, heat-treated. The movable jaw slides in a T-slot set in the face of the rectangular portion of the bar, and is operated by a screw with which it engages by means of a half-nut. About two-thirds of the length of the piece on which the operating screw is turned has two threads or helical grooves, right and left hand, of rapid lead, and a sleeve carrying a dowel pin engages these grooves. An outward movement of the sleeve upon the handle serves to close the movable jaw.



The wrench is now available in the 10-in. size, but a full range of sizes from 6 to 18 in. is contemplated.

— 222 —

Wrench Kit, No. 4

Bonney Forge & Tool Works, Allentown, Pa. [Vol.66,p.638]

This wrench set consists of three popular-size wrenches. They are made of chrome-vanadium steel and are of the double-end type with jaws at right angles to the handle.

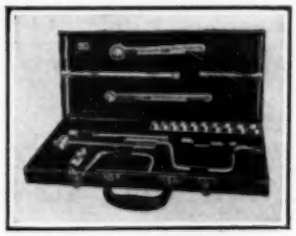
These wrenches are guaranteed to be stronger than the bolt or nut that they fit.

— 223 —

Wrench Set, Socket, No. 4

Bonney Forge & Tool Works, Allentown, Pa. [Vol.66,p.675]

The set consists of ten chrome-vanadium hexagon sockets ranging from $\frac{7}{16}$ to $\frac{7}{8}$ in., inclusive. The handles are also made of chrome-vanadium steel in the following types: Solid offset; offset ratchet; sliding T handle, 6 and 12 in. long; two brace- or speeder-type handles, one long and one short; two extensions of 5 and 10 in. length, and a universal joint.



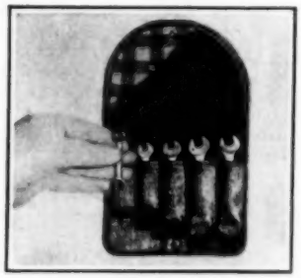
The entire outfit is packed in an enameled metal carrying case with leather handle.

— 224 —

Wrench Set, Miniature, No. 20

Bonney Forge & Tool Works, Allentown, Pa. [Vol.66,p.715]

This miniature chrome-vanadium wrench set, known as the No. 20 Kit, consists of five double-end wrenches with ten openings ranging from $\frac{7}{16}$ to $\frac{1}{32}$ in. They are neatly packed in a leatherette roll.



These wrenches are guaranteed to be stronger than the nut or bolt that they fit.

— 225 —

Wrench Set, No. 26

Armstrong Bros. Tool Co., 317 N. Francisco Ave., Chicago, Ill. [Vol.66,p.720]

The wrench set No. 26 is made up of six Armstrong-Vanadium wrenches in a leatherette roll. The wrenches include openings for five U. S. Standard nuts, eight S.A.E. nuts, and eight hexagonal cap screws. Openings are from $\frac{3}{8}$ to 1 in.

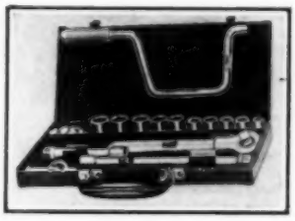
The wrenches are drop-forged from a special chrome-vanadium steel, heat-treated and finished in nickel over copper. The deep-set jaws are thin and narrow so that they can be manipulated in close quarters.

— 226 —

Wrench Set, Socket

Bonney Forge & Tool Works, Allentown, Pa. [Vol. 66,p.1114]

This set consists of ten chrome-vanadium steel hexagon sockets ranging from $\frac{7}{16}$ to $\frac{7}{8}$ in. inclusive, and three handles: Ratchet, sliding T, and 13-in. brace handle, the last of the so-called speeder type. Two extensions, 5 and 10 in. long,



and a universal joint are also furnished.

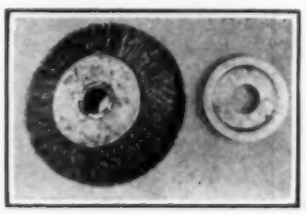
The entire outfit is packed in a substantial enameled carrying case with leather handle.

— 227 —

Circular Brush

Specialty Manufacturing Co., Berea Rd., Cleveland, Ohio. [Vol.66,p.314]

These brushes are made up in single thickness or may be built up in gangs to form wide-faced brushes. A pair of strong circular galvanized sheet metal stampings, provided with inwardly turned projections, or teeth, hold the brush material on either side. The tufts of bristle, fibre, wire or other material are accurately weighed to assure each tuft of the brush being evenly balanced with the rest. The material is held tightly in position between the stampings. The working surface of the brush is equally dense at all points of the circumference and as a result perfect balance is obtained even at high speed, it is said. When assembled in gangs the units will pack closely together.



— 228 —

Laps, Bench

Bethel-Player Co., Westboro, Mass. [Vol.66,p.434]

With this device it is possible to correct errors due to wear in micrometers, snap and limit gages, rods, gage blocks and parallels, also angular surfaces, such as cutting tools for thread gages.

The device consists of a cast-iron base and a series of circular lap-plates $4\frac{1}{2}$ in. in diam.,

and of $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1 in. in thickness. These plates are serrated on both sides and are guaranteed flat and parallel to within 0.0001 in. Each lap is clamped by a bolt and forms a turntable so as to insure equal distribution of the wear.

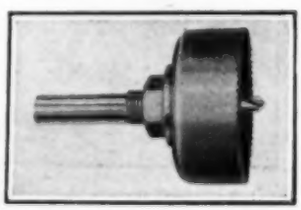
Larger sizes laps can also be furnished in diameters of 6, 9, 12 and 18 inches.

— 229 —

Hole Saw

Black & Decker Manufacturing Co., Towson, Md. [Vol.66, p.435]

This hole saw is for use in cutting round holes of large diameter in metals and wood. It is designed for use in con-



junction with this company's $\frac{1}{4}$- or $\frac{3}{8}$-in. portable electric drills.

The cutter is made of high-quality saw steel and the mandrel with which it is incorporated is designed to hold a $\frac{1}{4}$-in. twist drill, which drills the pilot hole and serves as a guide for the saw.

These saws are made in two sets. One is for automotive use in cutting holes in instrument boards and for general use where holes ranging from ⅜- to 3⅛-in. in diameter are to be cut. The set consists of five saws and two mandrels.

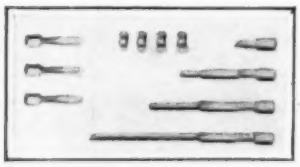
The other set also contains five saws and two mandrels, but is for plumbers and steam fitters.

— 230 —

Screw Drivers, Socket

Husky Wrench Co., Milwaukee, Wis. [Vol.66,p.798]

This line of socket screw drivers includes four sizes of extra-short screw driver bits, three sizes of interchangeable



socket screw drivers and four lengths of all-metal screw driver handles.

All units are designed for heavy work and can be used with standard Husky wrench handles. Swivel grips on the screw driver handles serve to hold the screw drivers at any angle, thus preventing the slipping of the screw driver bits. The bits are hand-forged of toughest alloy steel, properly heat-treated and nickel plated.

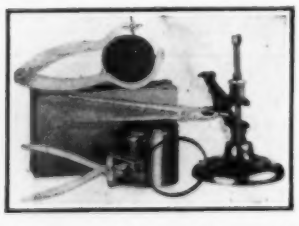
— 231 —

Tools, Repair, Automotive

Art Tool Manufacturing Co., 332 Lakeside Ave., W., Cleveland, Ohio. [Vol.66,p.997]

One of the tools, a piston-ring-groove carbon remover, will clean grooves ⅛, 5/32, 7/32 and ¼ in. in width and up to 5 in. in diam. The tool is 10 in. in length and weighs 8 ounces.

With the piston ring tool shown it is said that rings can be held firmly and expanded



without twisting, which might result in leaky rings. The device is 8 in. in length and weighs 6 ounces.

The valve lock tool is for removing and installing all kinds of valve locks. It can also be used for handling small parts in inconvenient places. It weighs 5 oz. and is 10 in. in length.

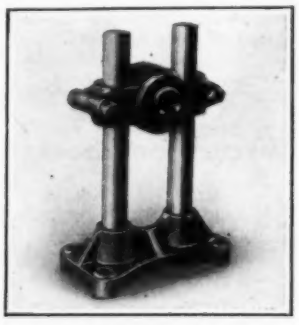
Transmission Equipment

— 232 —

Bearings, Outboard, Adjustable

Boston Gear Works Sales Co., Norfolk Downs (Quincy), Mass. [Vol.66,p.1115]

This line of adjustable outboard bearings has bushing bores ranging from ½ to 2⅛ in. in diam., and bores from ⅞ to 2⅞ in. when the bushing is not



used. The units are of sturdy construction and are said to be durable.

Maximum base-to-center distance is from 4¼ to 10⅞ in. and the minimum from 1⅞ to 4¼ in. Base dimensions vary from 2⅜x4⅛ to 5¼x10⅜ inch.

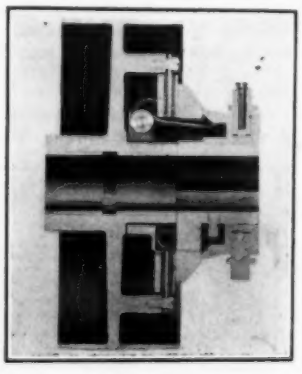
— 233 —

Clutches, Disk

Conway Clutch Co., 1956 W. 6th St., Cincinnati, Ohio. [Vol. 66,p.36]

A line of disk clutches, in single and multiple types and in three sizes, are being made. The hubs will accommodate shafts varying in diameter from 1⅛ to 2⅛ in. by 16ths. The single-disk type, illustrated, has disks made of heat-treated steel lined with metallic woven asbestos. This type runs dry, but the multiple-disk type operates in oil.

The exterior of the clutch is cylindrical and all bolts, toggles, levers, and pins, as well as the actuating members, are inclosed, but can be conveniently



adjusted. The three actuating levers are made of heat-treated chrome-nickel steel. Only a slight pressure is required to engage the drive. Centrifugal force is sufficient to disengage the clutch when the cone is withdrawn, but springs are also provided.

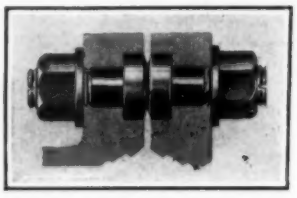
This clutch is said to embody features of safety, simplicity, and balance as well as considerable power for its limited space.

— 234 —

Coupling, Shear-Pin

Brown Engineering Co., 123 N. Third St., Reading, Pa. [Vol.66,p.676]

Tests show that this positive type of shear-pin coupling will break within 10 per cent of the rated load. The pin is made of an electric furnace bronze of special composition, and the



maximum stress is localized by means of a sharp V-groove.

When the pin breaks the coupling casing or one of the flanges is free to slip axially, thus allowing the broken ends to pass each other.

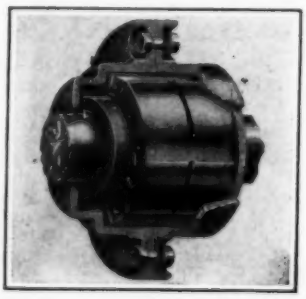
The shear-pin coupling is made in twenty sizes to take care of shafts ranging from 1 to 11 in. in diam. to transmit a load ranging from 1 hp. at 4,200 r.p.m. up to 1,500 hp. at 540 r.p.m. Standard shear pins can also be obtained for use in gear flanges and the like.

— 235 —

Coupling, Flexible, Improved

W. H. Nicholson & Co., Wilkes Barre, Pa. [Vol.66,p. 1114]

Improved lubrication features have been added to the flexible couplings. Holes are drilled longitudinally through the floating keys and hubs, and act as reservoirs for oil. A lip is extended from the casing over the left hub of the coupling, and into this lip, oil can be squirted either while the coupling is stationary or in motion.



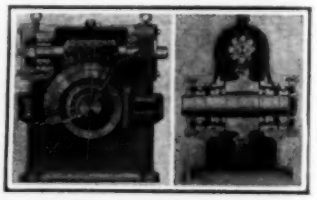
The improved type is known as style A and the older type without the lip as style B.

— 236 —

Speed Reducers, Wormgear, Type HG

Foote Bros. Gear & Machine Co., 215 N. Curtis St., Chicago, Ill. [Vol.66,p.275]

An improved line of type-HG wormgear speed reducers is made in sizes ranging from fractional horsepower up to 200 hp., and in ratios of reduction ranging from 4 to 1 up to 100



to 1 for the single-unit type and up to as high as 10,000 to 1 for the double-reduction type.

Ball and roller bearings are used to carry both the radial and thrust loads on the worm and wormwheels.

A special form of tooth design is employed. The wormwheels are made of chilled cast bronze of a low coefficient of friction, and the worms are made from nickel steel, case-hardened, ground and polished.

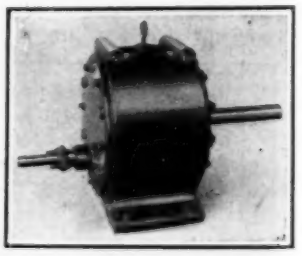
Four general types are furnished, with the worm below the gear, above the gear, with the worm shaft in a vertical position, and a combination of two units for double reduction.

— 237 —

Speed Reduction Unit

Morrison Machine Co., Paterson, N. J. [Vol.66,p.394]

This speed reduction unit is mounted in a split frame so that the input shaft can be placed in any position within



its range to accommodate itself to the base-to-center height of the motor to which it is coupled. In the particular size shown, this base-to-center

height can be varied from 5 to 13 inches.

The gear shafts are all mounted on ball bearings and both gears and bearings are lubricated by oil. A stuffing box prevents leakage when the input shaft is in a low position. The gears are all made of cut steel.

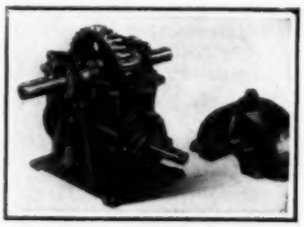
The unit pictured is rated to transmit 5 hp. with a reduction of 20 to 1 in four steps. By slight modifications it is possible to get almost any desired range of reduction in six steps.

— 238 —

Speed Reducers, Worm Gear, with Roller Bearings

Boston Gear Works Sales Co., Norfolk Downs (Quincy), Mass. [Vol.66,p.548]

A complete series of standardized worm gear speed reducers fitted throughout with Timken taper roller bearings is being offered. The addition of these bearings is said to



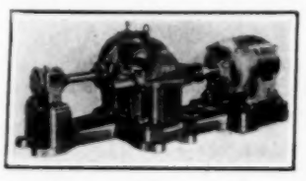
make possible a speed reducer that is quiet in operation and has a long life in hard service under all types of industrial conditions.

— 239 —

Speed Reducers

Falk Corporation, Milwaukee, Wis. [Vol.66,p.572]

These speed reducers feature the Falk continuous-tooth, all-steel herringbone gears. By eliminating internal rib projections in the housing, lubrication has been simplified and the possibility of dirt or core sand



working into the gears lessened. Additional features include steel-backed, babbitt-lined bearings, and an improved automatic lubricating system.

Standard motor beds have been adopted for these units. The reducers are made in three types; single-reduction units for ratios up to 9 to 1, double-reduction for ratios up to 70 to 1, and triple reduction units for ratios up to 300 to 1.

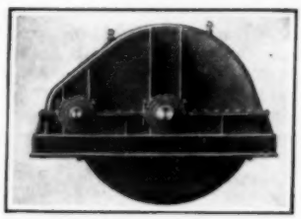
— 240 —

Speed Reducers, Series MS and MR, Mill-Type

R. D. Nuttall Co., Pittsburgh, Pa. [Vol.66,p.572]

This series of reduction gear units is for heavy service. There are six in all covering a range from 150 to 2,000 hp. They are designed for services that require transmission of heavy loads at relatively high speeds.

The units are equipped with either 7½-deg. single helical



gears, or with herringbone gears, treated or untreated, as desired. They are furnished with either sleeve or Timken tapered roller bearings.

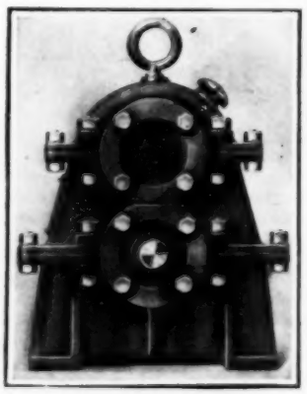
The gears are totally inclosed in cast-iron cases and run in a bath of oil, while the bearings are lubricated by a positive splash system.

— 241 —

Speed Reducer, Helical-Gear

R. D. Nuttall Co., Pittsburgh, Pa. [Vol.66,p.552]

This line of speed reducers, known as the SVR series, incorporates 7½-deg. helical gears and Timken roller bearings. It comprises single reduction units, ranging from 1 to 150 hp., with ratios up to 8 to 1. High



and low-speed shafts are parallel and offset in the same plane as illustrated.

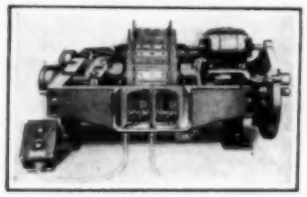
A positive splash system insures lubrication of both gears and bearings. The bottom of the case serves as a reservoir for the oil which is picked up by the gear teeth and thrown into oil troughs which lead it to the bearings.

— 242 —

Transmission, Variable-Speed, Remote-Control

Reeves Pulley Co., Columbus, Ind. [Vol.66,p.798]

An electrical remote control has been added to the standard variable-speed transmission. It consists of a fractional-horse-



power, reversible motor mounted on a bracket above the shifting screw of the transmission and connected to the screw by a single spur-gear reduction. The motor is started in either direction by one or more push-button stations operating through a magnetic switch mounted directly upon the frame of the transmission.

— 243 —

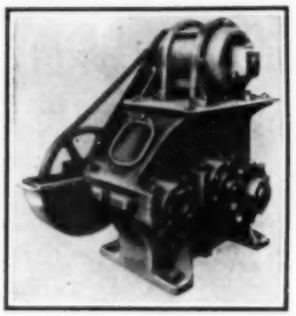
Speed Reducer

H. W. Caldwell & Son Co., Western Ave. at 17th St., Chicago, Ill. [Vol.66,p.995]

Type A reducer is designed particularly for conveyor and elevator service, but is also applicable to other kinds of machines. Type B unit is designed especially for driving screw conveyors. Each reducer is a self-contained unit with a motor mounted on top of a substantial housing.

The reducer combines two separate drives, a Link-Belt silent-chain drive from the high-speed motor shaft and a cut spur gear drive to the low-speed shaft. The shafts are over-size and are carried in Timken roller bearings supported in cartridge mountings.

Standard stock chain is used. The Type A reducer is made in sizes ranging from 5 hp. at 1,750 r.p.m. to 15 hp. at 860



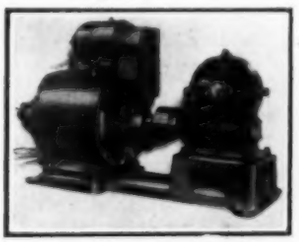
r.p.m. and in ratios ranging from 7:1 up to 40:1. The Type B reducer can be furnished in capacities ranging from 3 hp. at 1,750 r.p.m. to 20 hp. at 860 r.p.m., the ratios ranging from 7:1 up to 30:1.

— 244 —

Transmission Unit, Variable-Speed

De Mattia Brothers, Inc., Wellington St. & Getty Ave., Clifton, N.J. [Vol.66,p1035]

The illustration shows a 1-hp. variable-speed transmission unit. It is claimed that any desired speed through a range of 10 to 1 can be obtained accurately. The speed is varied



by means of push-button control located at any convenient position.

The unit shown is designed to operate a conveyor for taking rubber tubes away from a tube machine. The output shaft ordinarily rotates at 4 r.p.m. and the input at 40. The outfit consists of a driving motor and a worm reduction unit connected through a Francke flexible coupling, the whole being mounted on a common bedplate.

Welding Equipment

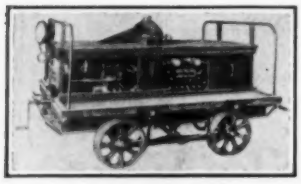
— 245 —

Welding Car, Gas-Electric, "Alternarc"

Electric Arc Cutting & Welding Co. 152 Jeliff Ave., Newark, N. J. [Vol.66,p.35]

The gas-electric drive, self-propelled welding car comprises a gas engine, a generator, and a series-wound driving motor mounted in a standard-truck car. One side of the car is insulated from the track. There is an arrangement for even speed gradation ahead and reverse and a neutral position for welding. A lighting transformer is provided for illumination at night.

If the oil pump fails to work in the engine, or when the oil needs replenishing, the ignition magneto is automatically cut



off. There is a mechanical governor limiting various speeds and also a throttle governor for welding arranged so that the engine idles until the electrode touches the work.

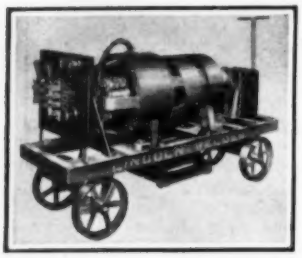
The welding generator provides both alternating and direct current for arc welding. A series differential field is used for 20-volt metallic-arc welding and a series-compound field for 40-volt carbon-arc welding. The generator also furnishes 110- or 220-volt power for lights, drills and grinders.

— 246 —

Welder, "Stable-Arc," Improved

Lincoln Electric Co., Cleveland, Ohio. [Vol.66,p.315]

In this machine there are only two small castings. The motor and generator rings, brackets and connecting rings are made of structural angles rolled into shape and welded together. The feet of the motor-generator set are drop forgings. The truck wheels are made of rolled T-sections, and



the hubs are steel tubes. Even the control panels are made of sheet steel welded together and to the support.

Owing to this construction, the liability of failure has been greatly reduced, and if parts become bent they may be straightened.

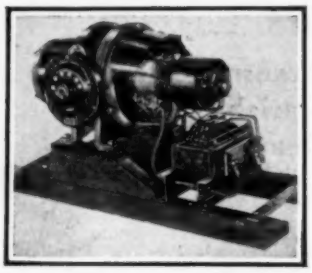
— 247 —

Arc Welding Set, "Frontier Model," Series 12

U. S. Light & Heat Corporation, Niagara Falls, N. Y. [Vol.66,p.433]

This light and cheap welding set has both 200 and 300 amp. capacity. The equipment is furnished in a portable design on wheels, semi-portable on skids, and unmounted.

This model is the result of simplified design of the USL welder. The field rheostat is



calibrated in terms of amperes and twenty-six current steps are available. With the 200-amp. model the widest range of heats is 50 to 225 amp. and in the 300-amp. model from 80 to 350 amperes.

The generator is shunt wound and is separately excited. All flux-carrying parts are fully laminated.

— 248 —

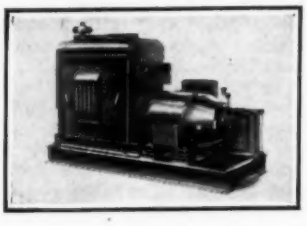
Welder, Gas-Engine-Driven

General Electric Co., Schenectady, N. Y. [Vol.66,p.476]

The small gas-engine-driven welding outfit incorporates a General Electric WD-11 welding generator driven by a Continental P-20 gasoline engine.

The generator has a continuous rating of 150 amp., and a 1-hr. rating of 200 amp. The driving motor is rated at 18.22 hp. S.A.E., but is capable of developing 23.5 hp. at 1,400 r.p.m. The generator is equipped with a control panel, rheostat, and self-adjusting stabilizing reactor.

The engine accessories includes a pressure feed lubricat-



ing system, a gravity feed carburator, air cleaner, centrifugal governor, 10-gal. gasoline tank, and tool box. The outfit is mounted complete on a structural steel base.

— 249 —

Welding Electrode, Type F

General Electric Co., Merchandise Department, Bridgeport, Conn. [Vol.66,p.548]

This improved welding electrode, designated as GE Type F, is said to combine the characteristics of a fluxed electrode with the quality of bead finish and the cleanliness of a bare welding electrode. It is recommended for welding of steel

The electrode has a uniform flowing quality. It penetrates quickly and produces a weld of high tensile strength.

It is furnished in 3/32-, 1/8-, 5/32-, 3/16-, and 1/4-in. sizes. The standard package is 50 lb., burlapped. It is also furnished on steel reels weighing approximately 200 lb., or in coils of slightly less weight.

— 250 —

Welding Rod, "Stable-Arc"

Lincoln Electric Co., Cleveland, Ohio. [Vol.66,p.753]

The "Stable-Arc" welding rod is a companion product of the "Kathode" welding rod made by this company. It is obtainable in standard 50-lb. bundles and in lengths of 14 in. It can be secured in longer lengths, if desired, and in any diameter up to 1/4 inch.

Current densities of 15,000 amp. per sq.in. can be used. It is said that this greater heat not only gives greater speed at less cost, but also better penetration and a smoother finish to the bead. It also results in an annealing action that increases the ductility of the weld. The splutter of the arc is also said to be decreased.

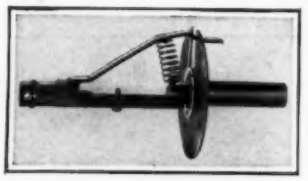
— 251 —

Electrode Holder, 600-Ampere

Lincoln Electric Co., Cleveland, Ohio. [Vol.66,p.1114]

The 600-amp. metal electrode holder is known as type TR, and handles electrodes up to 1/4 in. in diameter.

Many improvements are claimed for the holder, among them being: Replaceable copper jaws giving four lines of



contact and an all-copper path for the welding current; structural steel construction of maximum strength; light weight with good balance, an insulated and ventilated handle, and a shield for protection of the operator's hand.

— 252 —

Welding Equipment, Oxy-Acetylene

Imperial Brass Manufacturing Co., Chicago, Ill. [Vol.66, p.37]

This equipment comprises a complete line of oxy-acetylene welding and cutting torches and outfits. The standard welding torch is called Type X and is suitable for all kinds of oxy-acetylene welding. It embodies an improved principle which, it is claimed, insures accurate control of the gases and successful welds.

— 253 —

Blowpipe, W-101, Presto-O-Weld

Oxweld Acetylene Co., 30 E. 42nd St., New York, N. Y. [Vol.66,p.230]

The blowpipe is designed so that the oxygen and acetylene enter the inlets at about equal pressure. The mixing chamber is such that economical gas consumption is obtained.

The device is made entirely of brass and is simple in de-

sign. It is screwed together on metal-to-metal seats, with no soldered or packed joints. Stems for the blowpipe are made in three lengths, 4, 9, and 19 in. Each length in turn is made in three angles, 45, 60 and 90 degrees.

Ten interchangeable tips are offered with the blowpipe. Tips Nos. 3 and 4 are made of heavily copper-plated brass, and tips Nos. 5 to 12 are made of solid drawn copper.

The entire outfit includes two oxygen regulators with gages, standard hose and couplings, goggles, wrenches and an instruction booklet.

— 254 —

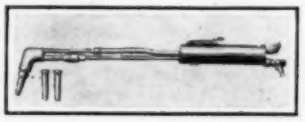
Cutting Torch, Oxy-Illuminating Gas, Type LPG

Alexander Milburn Co., 1,416 W. Baltimore St., Baltimore, Md. [Vol.66,p.274]

The type LPG cutting torch is for use with city gas, natural gas, or byproduct coke-oven gas. It is designed for cutting heavy plates, risers, gates and billets with a gas pressure of 4 in. of water. Tests have shown that the torch can be successfully used with by-product gas low B.t.u. content at an average speed of 1 ft. per minute.

A cut made with this torch shows a clean, sharp edge devoid of slag on the underside. The kerf is narrow and the surface smooth.

The torch is made of bronze



forgings and special seamless tubing. The oxygen is controlled by means of a thumb valve. A range of tips made of solid copper is provided.

— 255 —

Cutting Attachment for W-101 Welding Blowpipe

Oxyweld Acetylene Co. 30 E. 42nd St., New York, N. Y. [Vol.66,p.573]

The CW-101 cutting attachment for the W-101 welding blowpipe is intended to handle

occasional rather than continuous cutting work.

The device can be attached or disconnected from the welding blowpipe with rapidity and ease. It is fitted with two nozzles and will cut steel and wrought iron up to 1½ in. in thickness. The oxygen pressure required is about the same as that of the regular Presto-O-Weld C-101 cutting blowpipe. A table of cutting pressures is supplied.

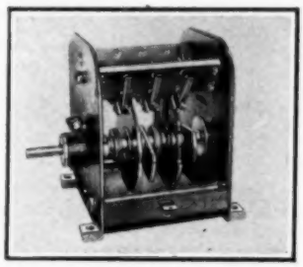
Miscellaneous Equipment

— 256 —

Switch, Limit, Rotating-Cam

Electric Controller & Manufacturing Co., 2700 E. 79th St., Cleveland, Ohio. [Vol.66,p.37]

This rotating-cam limit switch is for use with magnetic controllers for machines having such fixed sequence of operation



as slowing down, stopping, and reversing. The camshaft is equipped with tapered roller bearings and is designed to carry as many as six sets of contacts. The cams are independently adjustable, making the unit extremely flexible. The switch is entirely inclosed.

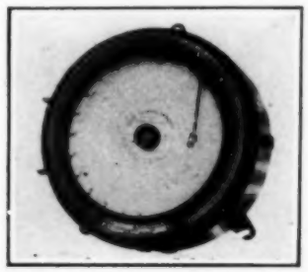
— 257 —

Instruments, Recording, Type CR

General Electric Co., Schenectady, N. Y. [Vol.66,p.194]

Four additional features have been provided in the Type CR recording instruments: the capacity of the pen, which has a glass body and a metal stylus, has been increased and it can be refilled without impeding the operation of the instrument. The polarizing adjustment, by which the calibration of the instrument can be changed, can be locked in any desired position. An improved suspension link retains the calibration and sensitivity of the instrument.

These instruments for either



a.c. or d.c. circuits, are available for switchboard mounting or as portable instruments. Ammeters are for 5 to 200 amp. and voltmeters are for 0 to 750 volts. The charts are driven by one-day or eight-day clocks or Warren synchronous motors.

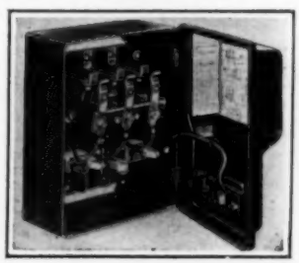
— 258 —

Switch, Starting, Across-the-Line Type No. J-1552, Form B

Allen-Bradley Co., 286 Greenfield Ave., Milwaukee, Wis. [Vol.66,p.230]

The type No. J-1552, Form B, switch extends the advantages of push-button control, thermal overload relays and no-voltage protection to the smaller sizes of motors.

The Form B switch measures approximately 8 in. high, 6 in. wide and 4½ in. deep. Form B-1 switch is equipped with start and stop push buttons in the switch cover; Form B-2 switch is without push buttons, while the Form B-3 switch has



a two-way lever switch for automatic hand control.

These switches are designed for starting single-phase motors up to ½ hp., 110 volts, and 1 hp., 220 to 440 volts, and for starting polyphase motors up to 1½ hp., 220, 440, and 550 volts. The switches can be furnished for use with any frequency, although 25 and 60 cycles are considered standard.

The contactor arm comprises a rigid insulating bar attached to the armature and supporting the three moving contacts. The two relays are under the magnetic switch, and their contacts are controlled by a thermal device of unique design. The relay must be manually reset.

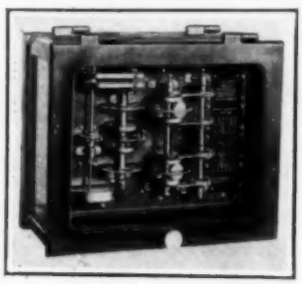
No-voltage protection is a standard feature of the form B-1 switch and with the form B-2 switch it is used with a three-wire push button. No-voltage release is provided by forms B-2 and B-3 switches with two-wire pilot control.

— 259 —

Demand Relay, Totalizing, Type DT

General Electric Co., Schenectady, N. Y. [Vol.66,p.797]

The type DT relay shown totalizes the demand from several watt-hour meters and allows the summation to be



transmitted to one demand meter, which can be of any contact-operated type. The relay can be furnished in forms suitable for totalizing the demand of any number of circuits from two to eight.

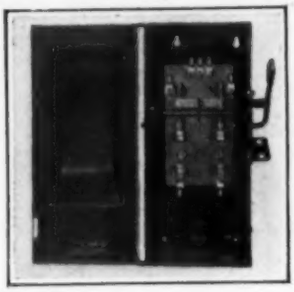
— 260 —

Switches, Two-Pole, with Solid Neutral Block

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.66,p.957]

This line of two-pole switches with solid neutral block is for use on three-wire grounded systems with ratings from 30 to 300 amp. This type of switch is arranged to utilize the advantages of reduced size made possible by using the solid neutral without the third switch blade, so that the width is about the same as the standard two-wire switch.

The 30-amp. switch is of the 00 type, the 60-, 100- and 200-



amp. sizes of the WK-62 type, and the 400- and 600-amp sizes of the WK-60 type.

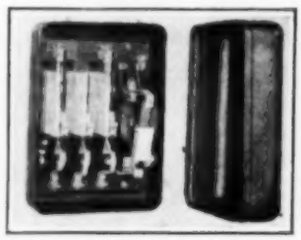
— 261 —

Magnetic Switch

General Electric Co., Schenectady, N. Y. [Vol.66,p.914]

This switch, bearing the designation CR-7006-D-20, requires a very small mounting space, and is said to have many desirable electrical features.

Large barriers are used to permit the switch to interrupt



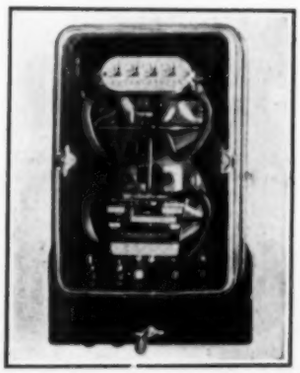
high currents. The electrical interlock is designed so that by removing a wire from the back of the base it is possible to use the switch on insulated circuits. Overload protection is provided.

— 262 —

Watthour Meters, Type OB

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.66,p.959]

The Type OB polyphase meter has all the distinctive features of the single-phase OB type and is used on two or three-phase circuits with either three- or four-wire systems. Complete temperature compensation is featured.



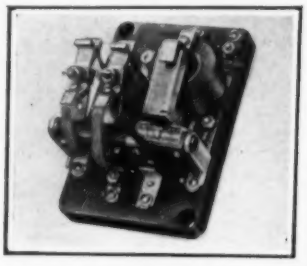
— 263 —

Contractors, A.C. Small

General Electric Co., Schenectady, N. Y. [Vol.66,p.1108]

This small a.c. contactor, for general application, is self contained on a molded base, and provides two main poles rated at 15 amp. with a normally open interlock. This device consumes 3 to 6 watts, and can, therefore, be operated from a 50-watt transformer.

The contactor bears the designation CR-2810-1332, and is made in four forms. Form A



is made with a short magnet gap for use in thermostat control applications and is limited to 220 volts on the contact tips.

Form B is made with a wider tip gap and is provided with a barrier between the tips. For 3-phase circuits, it is rated at 2 hp. for 110 and 220 volts, 1½ hp. at 440 volts, and 1 hp. at 550 volts.

Forms C and D are the same as forms A and B respectively, except that they are back connected.

— 264 —

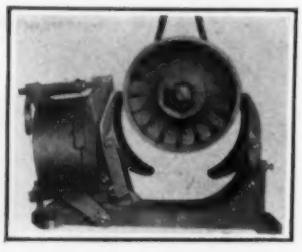
Brake, Magnetic, Type WB

Electric Controller & Manufacturing Co., Cleveland, Ohio. [Vol.66,p.676]

The type WB magnetic brake was developed to permit the quick removal of the motor armature with the brake wheel in place without the necessity of taking the brake apart or disturbing any adjustments.

The shoe arms are caused to operate by means of a simple lever movement having the connecting link within the base below the wheel.

The entire unit is made from steel castings and the brake shoe linings are made of asbestos interwoven with wire and molded to shape under heavy pressure. On the smaller brakes the linings are ⅛ in. thick, and on the larger ones ¾ in. thick.



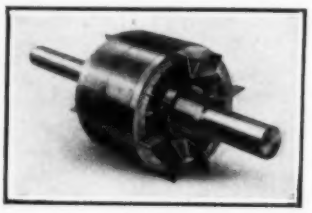
— 265 —

Motors, General-Purpose, High Reactance

General Electric Co., Schenectady, N. Y. [Vol.66,p.352]

A complete line of high-reactance inductance motors bearing the designation FT, ranging from 7½ to 50 hp., are now available.

This line of motors is said to embody simplicity, reliability, low cost, and line-switch control involving full-voltage starting. The motors give slightly higher starting torque but approxi-



mately the same starting current as the standard squirrel-cage motor.

The rotors are of cast aluminum with bars located so as to give a high reactance effect at starting. An ordinary line switch can be used to start the motors, but in order to obtain proper overload and under-voltage protection, the motors are recommended for use with magnetic starting switches using push-button control.

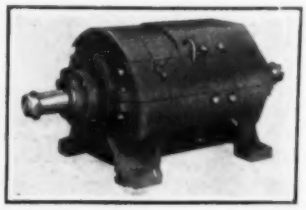
— 266 —

Motors, Steel-Mill, MD-400 Series

General Electric Co., Schenectady, N. Y. [Vol.66,p.753]

This line of steel-mill motors, known as the MD-400 series, conform to the specifications of the Association of Iron & Steel Engineers.

Roller bearings are supplied as standard and sleeve bearings



are optional. The line involves improved mechanical construction, more efficient use of materials and a refinement of details, when compared with the superseded line of MD-100 motors. Parts are more accessible and, at the same time, are better protected.

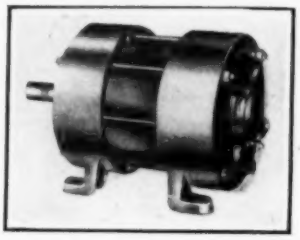
Among other claims made for this motor are: Ability to commutate high overloads, to accelerate rapidly and to withstand frequent reversals.

— 267 —

Motors, Induction, All-Steel, Ball-Bearing

Lincoln Electric Co., Cleveland, Ohio. [Vol.66,p.957]

A complete line of all-steel, ball-bearing, polyphase induction motors, ranging in size from 1 to 100 hp., in all standard voltages and cycles, is an-



nounced. In the construction of these motors gray-iron and malleable castings have been entirely replaced by hot-rolled steel.

Drop-forged steel feet are welded on to the steel end rings of the motor. The end brackets, or bearing supports, are also made of welded steel.

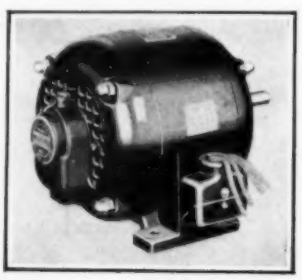
Less thickness of metal is required in the frame owing to the greater strength of steel than that of cast iron. It is also claimed that the increased ventilation thus obtained results in a considerable increase in overload capacity.

— 268 —

Motors, "Super Wick"

Master Electric Co., Dayton, Ohio. [Vol.66,p.994]

This line of "Super Wick" motors is built in the single-phase, repulsion-induction type; 2- or 3-phase squirrel-cage in-



duction type; and a compound-wound d.c. type in sizes of ¼ to 1 hp., inclusive.

The Super Wick system features larger oil and wick reservoirs with sufficient oil capacity for a year's operation, the use of longer wicks with greater filtering capacity, and a positive means to insure the circulation of filtered oil to the shaft.

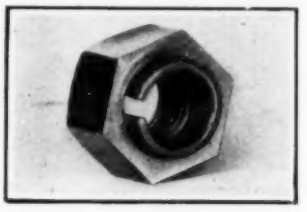
Other features claimed for these motors are compact design and a more thoroughly inclosed frame, affording better protection to the winding.

— 269 —

Locknut, "Lafever"

American Locknut Co., Longview, Wash. [Vol.66,p.392]

The "Lafever" locknut consists of a standard hexagon nut, countersunk on the underside to accommodate a soft copper ring, which partially projects from the nut. The principle of the locking action is that the soft copper flows into space around the recess in the nut and between the threads of the bolt,



where it hardens due to the work performed upon it.

In addition to locking, the copper piece forms a watertight gasket around the bolt.

— 270 —

Locknut, Crown

Barty Axle Corporation, Syracuse, N. Y. [Vol.66,p.436]

These Crown one-piece lock nuts can be held securely at any place on a bolt. They are made by turning an annular groove at the top of the nut

and then subjecting the piece to compression. As a result the pitch of the thread near the groove becomes shortened and, hence friction-locking contact is produced.

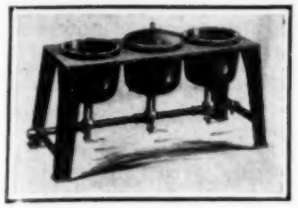
The Crown nut is hand free until the end of the bolt reaches the groove. From this position on it has to be wrenched to the desired holding place.

— 271 —

Melting Furnace, No. 2-C

Johnson Gas Appliance Co., Cedar Rapids, Iowa. [Vol.66,p.674]

The No. 2-C melting furnace is for use in re-babbitting connecting rods. The furnace con-



sists of three cast-iron melting pots, 6 in. in diam., and any soft metal such as lead or babbitt can be melted in them. Each pot has a separate Bunsen burner with shut-off valve and pilot light.

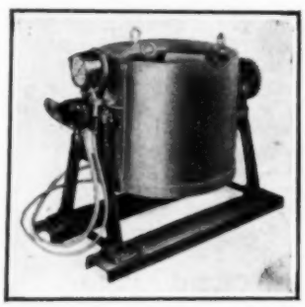
The first melting pot is used with hot babbitt for melting out the old metal, the second is for re-tinning, while the third pot holds the new babbitt metal.

— 272 —

Melting Pot, 750-Pound

Harold E. Trent Co., 439 N. 12th St. Philadelphia, Pa. [Vol.66,p.714]

The 750-lb. electrically-heated melting pot was built for melting babbitt metal for large bearings. The pot has a pouring spout and tilting mechanism and is furnished complete with



automatic temperature control apparatus.

The design follows closely that of standard Trent melting pots in that it has a special cast-iron crucible and a steel casing with heavy insulation between. The tilting mechanism is operated by means of a handwheel driving through a worm gear.

The pot is arranged for operation on single, two- or three-phase circuits.

— 273 —

Paint Spray, 3-in-1

Alexander Millburn Co., 1416 W. Baltimore St., Baltimore, Md. [Vol.66,p.433]

This 3-in-1 spray gun is adaptable to fine work such as painting and lacquering automobiles, or for coarse operations such as painting machinery and buildings. It is a triple-purpose gun, having siphon-feed, pressure-feed or gravity-feed spray.

The multiple head adjustment permits either a flat fan spray in either a horizontal or vertical position, or a round spray. The spray can be closely adjusted for touching up, shading and high lighting.

Accurate control of both the air and paint is obtained by

means of a trigger. The gun is of all-metal construction and a simple bayonet type lock is used on the container, which is leak proof. Only three parts are in contact with the paint and they are easily cleanable.

— 274 —

Paint-Spray Unit, Type E-1

Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md. [Vol.66,p.917]

This outfit with which the type E gun is furnished, can be used for painting and lacquering automobiles, furniture and for general all-around

work. It will operate efficiently using anything from heavy anti-corrosive paint to very thin lacquer.

An ordinary garage air compressor affords a sufficient volume of air to operate the outfit. An air purifier, which is essential for good results is provided. The air passes through a series of double baffles which extract moisture and other impurities from it.

In addition, the outfit contains a quart container, air regulator and 25 ft. of hose with the necessary connections at the ends.

— 275 —

Furnaces, Electric, Revolving-Retort

W. S. Rockwell Co., 50 Church St., New York, N. Y. [Vol.66,p.75]

The machine illustrated is designed especially for annealing non-ferrous metal parts and has a capacity ranging from 1,500 to 2,000 lb. per hour. The parts are fed from a hopper at the charging end into a metal retort, through which the pieces are moved by means of a spiral, to the discharge end. Quench-

ing is accomplished by means of a rotary tank in order to employ the principle of individual exposure.

The retort is mounted on four rollers and is chain-driven through a reducing gear. A control panel carries temperature-regulating instruments and switches.

The connected load for this type of furnace ranges from 75 to 125 kw. For heat-treating steel products similar furnaces are available with capacities ranging from 200 to 1,000 lb. per hour with connected loads ranging from 50 to 150 kw. according to requirements.

— 276 —

Bench Punch, No. 16

Whitney Metal Tool Co., Rockford, Ill. [Vol.66,p.314]

The No. 16 bench punch illustrated has a capacity for punching a hole $\frac{3}{4}$ in. in diameter

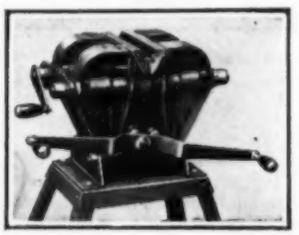
in a $\frac{1}{2}$-in. plate. It may be furnished either with or without the work table shown.

— 277 —

Belt Lacer, No. 8

Clipper Belt Lacer Co., Grand Rapids, Mich. [Vol.66, p.351]

With this machine it is possible to lace both ends of an 8-in. belt in a single operation in $1\frac{1}{2}$ min., it is said. Because of a new principle of design, it



is possible to apply a pressure of about 45,000 lb. on the belt so that the hooks are imbedded in perfect alignment flush with the surface.

The No. 8 lacer will handle all belts from 1 in. up to and including 8 in. in width in a single operation, and wider belts in two or more operations.

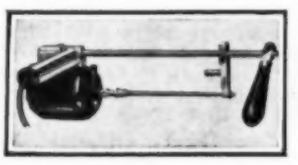
— 278 —

Mica Undercutter, No. 6

Hullhorst Micro Tool Co., Toledo, Ohio. [Vol.66,p.354]

It is claimed that this electrically-operated, portable mica undercutter will undercut any commutator in one-tenth the time required by hand. One of the features of the tool is the use of a small cutter $\frac{3}{32}$ in. in diameter.

The machine undercuts mica at a speed of 100 to 200 ft. per hr, when undercutting to a depth of $\frac{1}{32}$ in. The width of



cut depends upon the thickness of the cutter.

The tool is driven by a Westinghouse motor and can be operated from any ordinary light circuit of 110 volts.

— 279 —

"Ventex"

Midwest Steel and Supply Co., Inc., Bradford, Pa. [Vol. 66,p.393]

This device is for preventing explosions in storage tanks holding volitile and inflammable liquids.

It is fitted at the filling point of the tank and has a cylin-

drical metal mesh screen that permits the free passage of liquid, vapor or gas, but will not allow the passage of a spark or flame. The container is made gas tight by means of a safety pressure valve. There is also an automatic intake valve to relieve the vacuum when the tank is being emptied.

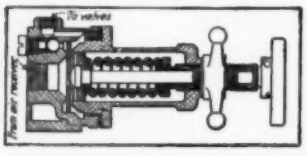
— 280 —

Pneumatic Unloader, Differential, "Simplate"

Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y. [Vol.66,p.599]

Air compressors made by this company are now being equipped with an improved "Simplate" differential unloader.

The valve proper is a single plate of stainless steel ground



to a flat surface. A ball check valve held against the seat by an adjustable spring is the other movable part of the valve. It is said to operate with a 5-lb. range between unloading and loading the compressor.

The unloader is now built for standard pressures from 50 to 125 lb. per sq.in., for low-pressure work of 40 lb. or less, and for high pressure-work up to 500 lb. per sq.inch.

— 281 —

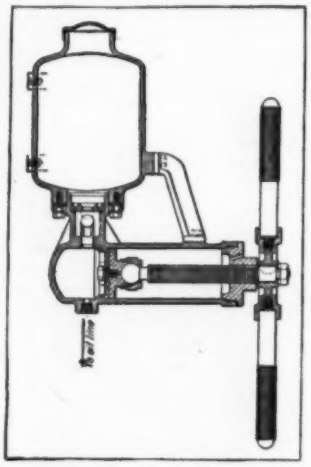
Lubricating System

Farmer Lubrication Systems, Inc., 2611 Sixteenth St., Detroit, Mich. [Vol.66,p.511]

This mechanical lubricating system is designed for the positive lubrication of machine parts with solidified transmission oil from a centrally controlled point.

It consists of four main parts: A pressed steel reservoir holding about three months' supply of heavy oil; a screw or plunger type compressor; connecting each bearing, a positive automatic valve, which both measures and forces the lubricant into the bearing; and a pressure gage which indicates that the system has functioned properly. The plunger screw can be either hand operated or motor driven.

The measuring valve is de-



signed to supply the correct amount of oil to each bearing. by regulating the travel of the piston.

— 282 —

"Tool Tender"

Pollard Bros. Manufacturing Co., 4035 N. Tripp Ave., Chicago, Ill. [Vol.66,p.638]

The stand illustrated is similar to the tool stand that this company has been making for several years except that the pan is deeper and a cover has been provided. The cover is

of heavy construction and is fastened to the pan by means of strap hinges. It has a strong hasp so that tools or parts can be safely locked in the cabinet.

— 283 —

Grease Cups, Compression

Link Belt Co., 910 S. Michigan Ave., Chicago, Ill. [Vol. 66,p.675]

As the name implies these "Hex-Top" grease cups are of hexagon shape so as to offer

an easy purchase for wrench or hand turning. The particular feature of this line of grease cups is the combination of a compression cup with an Alemite or Zerk fitting.

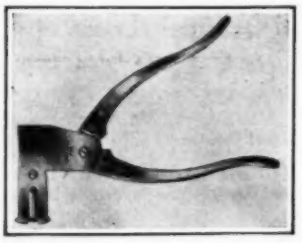
A grease gun is applied to the fitting when the cup is turned up to a high point so that a good reserve of grease is stored. An occasional slight screwing down is all that is then necessary.

— 284 —

Cotter-Pin Extractors

Burgan Corporation, Shenandoah, Ia. [Vol.66,p.719]

The cotter-pin extractor is made in two sizes. The Junior Model shown is used in extracting pins of $\frac{1}{4}$ in. and smaller, while the larger,



Heavy-Duty size, is for pins up to $\frac{1}{2}$ in. These tools are parkerized and polished so as to be rust proof.

To use the tool one jaw of the extractor is inserted in the eye of the cotter and the handles are pressed toward each other as with a pair of pliers.

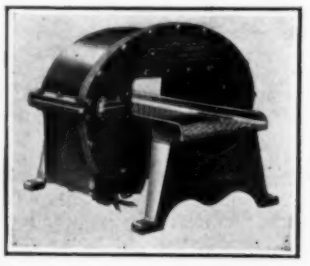
— 285 —

Demagnetizer

Blanchard Machine Co., 64 State St., Cambridge, Mass. [Vol.66,p.757]

The demagnetizer is designed for removing residual magnetism from small pieces that have been held on a magnetic chuck. It is not recommended for single, heavy pieces although the opening will pass a piece $6\frac{1}{2}$ in. wide and $2\frac{7}{8}$ in. high.

The coil is thoroughly insu-



lated and is entirely inclosed in a brass case. It is wound for use on 60-cycle alternating current of 110, 220, 440 or 550 volts. The power consumption is about 550 watts.

The net weight of the unit is 100 lb. Boxed for shipment it occupies a space of 19x17x15 in.

— 286 —

Siren, "Triple-A"

Federal Electric Co., 8700 S. State St., Chicago, Ill. [Vol. 66,p.758]

The "Triple-A" Siren is for use as a fire alarm or as a start-and-quit work signal in industrial plants.

The device consists of three sirens connected in parallel and mounted on a triangular base. The tone of each siren is different and has been so selected

as to give a pleasing combination. The sound under normal conditions has a radius of $\frac{3}{4}$ to $\frac{1}{2}$ mi. in every direction.

The device is simple in construction and is entirely inclosed. It is finished in red Duco and weighs about 40 pounds.

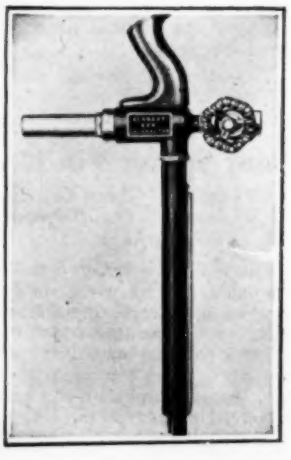
— 287 —

"Adamant" Gun

Botfield Refractories Co., Swanson & Clymer Sts., Philadelphia, Pa. [Vol.66,p.755]

The Adamant gun is for use in facing or coating the fire-exposed surfaces of new or old furnace linings with Adament firebrick cement, pre-mixed with Adachrome or other refractory material.

The gun operates on either



air or steam pressure ranging from 50 to 80 lb. per sq.in. There are no moving parts to get out of order and there are only two wearing parts, made of tough wear-resisting material. The gun is claimed to lay the mixture on the wall.

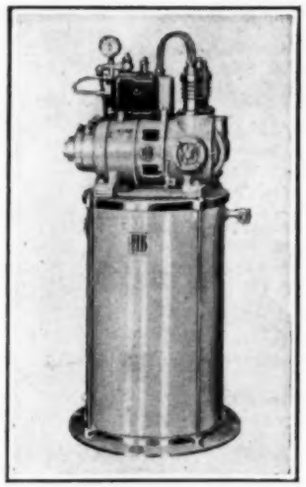
— 288 —

Air Compressor, Upright, "Trojan"

Hobart Bros Co., Troy, Ohio. [Vol.66,p.918]

Instead of being mounted on a 22-gal. horizontal tank, this ¾-hp. "Silent Twin" automatic air compressor is mounted on a 26-gal. upright tank. The unit occupies a space only about 2 ft. in diameter.

It is fully automatic in operation, and the motor is equipped with an automatic stop-and-start switch and has automatic dial control that enables the compressor to start immediately without undue load on the motor. Regular equipment includes an accurate pressure gage, air filter, oil and moisture drain, oil gage, check value and safety valve. Seamless copper tubing is used for all connections.

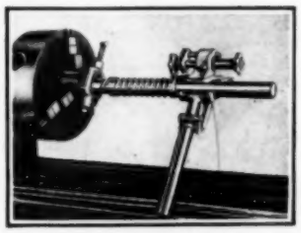


— 289 —

Spring-Winding Tool

Superior Spring Winding Tool Co., Milwaukee, Wis. [Vol.66,p.911]

This tool will wind tempered spring steel wire of any size from hair springs up to ½-in. wire with a max. diam. of 2 in. The pitch is regulated by an adjusting screw with graduations, and the tension of the wire is regulated by a friction plate.



The ends of compression springs can be closed.

The tool can be used either in the lathe or in the vise, and it will make either right or left-hand springs.

— 290 —

Power Unit, Electric, Portable

Syntron Co., Pittsburgh, Pa. [Vol.66,p.1,034]

Two types of portable electric power units are being made for general use. In one of the types a 2-cylinder water-cooled engine is used and in the second a 4-cylinder 4-cycle engine.

The Type PT230 Unit is shown mounted on a trailer. The same unit can be supplied on skids with carrying handles. The current is supplied at 110 volts, 30 cycles, 2 phase.

The 4-cylinder model, known as T425, was designed to furnish sufficient current for operating heavy-duty electric tools and equipment. For railroad use it is mounted on skids with two double flanged wheels. A railing of steel tubing facilitates handling. This unit can also be supplied on a trailer.

— 291 —

Spring Winder

Fostoria Screw Co., Fostoria, Ohio. [Vol.66,p.1,033]

With this device it is claimed that any coil spring ranging from ⅛ to 1¼ in. in outside diam. and using any gage of wire to ⅞ in. in diam. can be wound in a few minutes time. The coil may be of any length and pitch, either right or left hand.

A tapered cam determines the lead or pitch. One mandrel, ⅞ in. in diam. is regularly supplied together with a wrench.

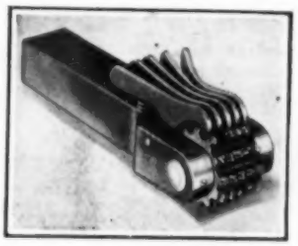
— 292 —

Numbering Device

Noble & Westbrook Manufacturing Co., Hartford, Conn. [Vol.66,p.1,107]

The hand numbering device is intended for the purpose of stamping a complete number upon any article with one blow of the hammer.

Each numbering wheel ordinarily carries ten digits from 0 to 9 and has one blank space, so that the number to be stamped may be continuous or consist of two or more numbers in line with space between. Special wheels with any ten letters of the alphabet may be furnished, or the stamps may comprise short logotype names. Any reasonable number of wheels may be included in the frame.



The frame and latch-levers are made of heat-treated alloy steel, while the wheels are made of special high-grade tool steel.

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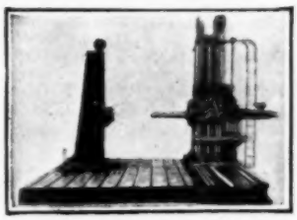
Boring Machines

— 1 —

Boring Machine, Horizontal, Large Size

L. Conti & Co., Malnate (Como), Italy. [Vol.66,p.141E]

This machine has a spindle about 7½ in. in diam. and will bore holes up to about 5 ft. in diameter by 5 ft. long. The



maximum and minimum center height above the base plate are 10 ft. and 1 ft., 9 in. respectively. The upright has longitudinal movement along the bed of about 13 ft., while the length of the bed is about 19 feet.

The spindle has twenty speeds ranging from 1.2 to 100 r.p.m. and ten reversible feeds are provided ranging from 0.01 to 8 mm. per rev. In the outboard support, the bearing for the boring bar is counterbalanced by a weight and can be adjusted vertically. The machine takes 15 hp. for driving, weighs about 37 tons with the baseplate normally provided. The base plate weighs about 13 tons although it may be dimensioned according to the work to be undertaken.

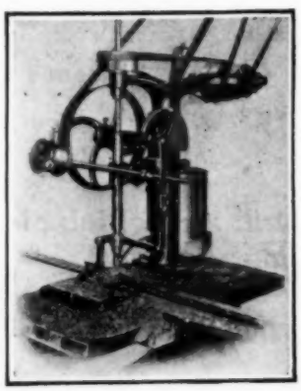
Drilling Machines

— 2 —

Drilling Machine with Automatic Indexing Motion

Fellows & Darby, Ltd., Slaney Street, Birmingham, England. [Vol.66,p.263E]

The actual drilling machine is of standard form with the usual pulley drive. The machine table bears a copy bar with carrier on which the drill or tap is to be mounted. The copy bar itself is drilled with



a series of holes corresponding to the holes to be produced and by means of a special mechanism this bar is moved forward to a new drilling position as the drill spindle returns after each cutting operation.

The drill is fed by weight with a tension spring to limit it. Holes may be drilled at varying distances apart. The indexing motion is controlled by a cam and the machine is entirely automatic in action.

— 3 —

Drill, Vertical, 16-Spindle

Haighs (Oldham) Ltd., Oldham, England. [Vol.66,p.5E]

The machine is intended for general purpose work and holes up to ½ in. in diam. can be drilled within an area of 21x9 in. The main frame casting carries the drill head, feed gearbox and table and the drive is taken from a countershaft provided with tight and loose pulleys.

Three spindle speeds from 510 to 900 r.p.m. are obtained from a cone pulley. The drive to the head is by belt over jockey pulleys running in ball bearings.

The spindles are arranged in two clusters and are driven by steel gears in oil-tight boxes. Adjustment transversely and longitudinally is provided each spindle. A change feed gear box provides three feeds from 90 to 147 cuts per inch.

The table has a working surface of 35x26 in. and is balanced by weights inside the column. It has a vertical traverse of 32½ in. All revolving parts run either in phosphor-bronze or ball bearings.

This machine takes 19 hp. to drive and occupies a floor space of about 5x4 feet.

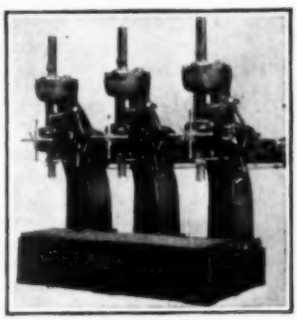
— 4 —

Drilling Machine, Vertical, Triple-Head

W. Asquith, Ltd., Halifax, England. [Vol.66,p.43E]

This drilling machine will admit work up to 36 in. in diam. The center distance of the two outside spindles is 6 ft. 6 in. and the table measures 8x2 feet.

Each drilling head is a complete unit with its own controls all of which have been cen-



tralized. Each spindle is carried in a sleeve and is traversed up and down by rack and pinion. Ball bearings are used on the spindle which is balanced by weights inside the standard. Quick hand adjustment, fine hand feed and power feed through a gear box are provided.

By means of a back gear box eighteen spindle speeds ranging from 27 to 405 r.p.m. are available, while the four feeds vary from 35 to 120 cuts per inch. The drive in each head is direct from a lineshaft to a constant speed pulley. If desired one head can be made adjustable to enable holes of varying centers to be drilled.

The floor space occupied is 9 ft. x 6 ft. 3 in. and the approximate weight is 6¾ tons.

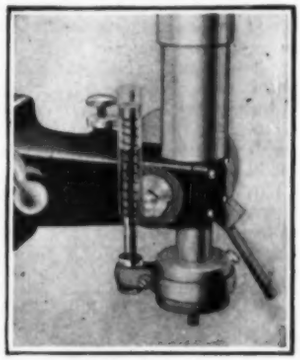
— 5 —

Drills, Sensitive, High-Speed, Improved

Jones & Shipman, Ltd., Leicester, England. [Vol.66,p.88E]

These machines have been improved by the introduction of a new cushion spring return to the spindle. A delicate spiral compression spring acts on a plunger parallel to the rack bushing, to which it is attached by a projecting lug.

It is claimed that the sensitiveness of the machine is so improved that the breakage of drills is almost unknown, while



the positive "feel" gives confidence to the operator, thereby greatly increasing the output.

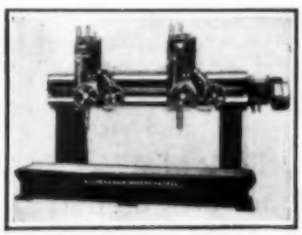
— 6 —

Drill, Vertical, Swivelling-Head Duplex

Kitchen & Wade, Halifax, England. [Vol.66,p.91E]

With the duplex vertical drilling, tapping and studding machine shown, holes up to 2½ in. in diam. can be drilled from the solid in steel and up to 3 in. in cast iron. The maximum and minimum drilling centers are 7 ft. 9 in. and 2 ft. 4 in. respectively and work up to 2 ft. 7 in. deep can be admitted. Holes can also be drilled at an angle and in a vertical plane.

The bed measures 10 ft. 6 in. long by 2 ft. wide. The two standards are large and rigid and the cross-slide is deep. The



two swivelling heads are identical in design but each saddle is independent.

The drive of the machine is by belt to a single horizontal shaft which in turn drives the heads through long keys. Two power feeds of 80 and 100 cuts per in. are available. Hand feed is also provided. The spindle can be started and stopped or reversed by means of a positive clutch mechanism on the saddle. Four spindle speeds of 60 to 183 r.p.m. are provided.

— 7 —

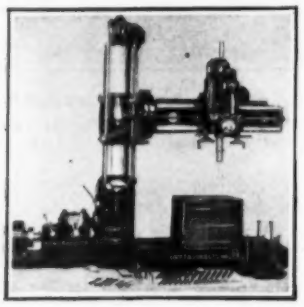
Drill, Radial, Universal, 6-Foot

G. Swift & Sons, Ltd., Halifax, England. [Vol. 65,p.240E]

The column has been made of larger diameter than usual, and an improved friction re-

verse to the spindle is also featured. The machine drills to the center of a circle 10 ft. 10 in. in diam. The maximum radius of spindle is 6 ft., and the minimum 2 ft. 5 in. Work up to 5 ft. 9 in. deep can be admitted between the spindle and baseplate.

The tubular-section arm can be swung through a complete circle on the column and can also be swiveled on the sleeve



through a complete circle so that a large variety of work can be machined at any angle. The working surface of the baseplate measures 72x39 in. and the box table is 30 in. long x 24 in. square.

The arm has a vertical travel of 3 ft. while the high-carbon steel spindle has a vertical traverse of 15 in. and swivels 40 deg. on either side of the vertical.

The spindle has both hand and power feeds, quick advance and return as well as reverse motion for tapping. Eighteen spindle speeds ranging from 27 to 500 r.p.m. are available as are three feeds of 55, 75 and 105 cuts per inch.

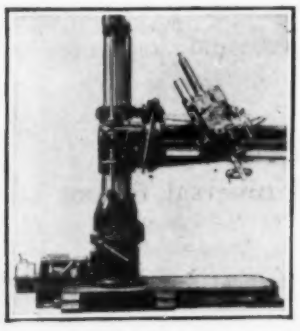
The drive is from a 10 hp. shunt motor.

— 8 —

Drill, Radial, Universal, 6-Foot, Light-Type

W. Asquith, Ltd., Halifax, England. [Vol.65,p.292E]

This universal radial drilling machine will drill work at any desired angle. The minimum radius of the spindle is 2 ft. 9 in. and work up to 5 ft. 9 in. deep can be admitted. The working surface of the baseplate is 5 ft. 5 in. x 3 ft. 3 in.



The baseplate forms a sump for the coolant.

The arm has power adjustment on the column of 2½ ft. It swings through a complete circle and swivels 180 deg. out of vertical. Reversing motion is incorporated so that tapping and studding operations can be performed. The saddle can be swivelled through 65 deg. and has a vertical traverse of 20 in. Quick hand adjustment is also provided.

With friction feed of the spindle, the pressure can be adjusted according to the nature of the drilling being done. Four rates of power feed from 35 to 120 cuts per in. are provided. There are sixteen spindle speeds varying from 12 to 400 r.p.m. and all controls are centralized.

— 9 —

Drill, Radial, Universal, 6-Foot, Portable

F. Town & Sons, Halifax, England. [Vol.66,p.78E]

This machine drills holes up to 2 in. in diam. in vertical horizontal or angular positions. The minimum radius of the drilling spindle is 2 ft. 8 in. The arm tilts to an angle of 30 deg. and the drilling head can be swiveled through a complete circle at the end of the arm. By means of a lifting hook, the machine can be picked up by an overhead crane. The

bogie bed is arranged on four wheels and has screw-jack supports to take the weight when drilling.

The slide carrying the pillar is moved along the bed by hand, the traverse being 5 ft. 9 in. The arm can be elevated by hand or power, its traverse on the column being 4 ft., while the horizontal traverse of the arm on the slide is 3 ft. 4 in. The maximum distance from the floor to the spindle when drilling vertically is 5 ft. 9 in., or in horizontal drilling 8 ft. 6 in., and in both cases the minimum distance is 1 foot.

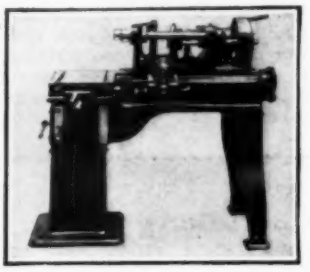
The drive is by a 3-hp. reversible motor. There are six spindle speeds ranging from 42 to 330 r.p.m. The feeds vary from 150 to 250 cuts per in. The reverse speed is approximately three times the forward speed. The machine weighs 8,300 pounds.

— 10 —

Drilling Machine, Horizontal, Two-Spindle

William Heap & Co., Ltd., Ashton-under-Lyne, England. [Vol.66,p.91E]

This machine is designed for drilling, facing and tapping holes in cast iron and brass. The two spindles can be ar-



ranged for drilling or for boring, one roughing and the other finishing.

The bed is 3 ft. 6 in. long and carrys at one end a driving headstock which has a sliding motion. The other end provides a gap for receiving a table which can be raised and lowered. The table, which is 12x20 in., can be adjusted to maximum and minimum center heights of 9 and 1½ in., respectively.

The main drive is by flanged pulley and two-speed countershaft. There are two sets of sliding gears, one suitable for cast iron and the other for brass.

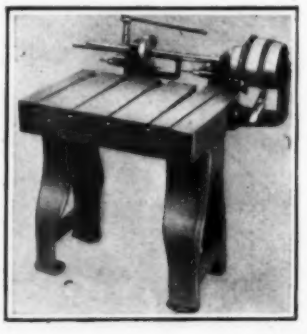
— 11 —

Drill, Horizontal, Tandem, Special-Purpose

Jones & Shipman, Ltd., Leicester, England. [Vol.66,p. 131E]

This drill has two spindles in line for simultaneous drilling of hinge holes in grate doors.

On one side of the table are



bolted the drilling heads, which are adjustable for a distance apart to suit the hinges. A tight and loose pulley drives the two heads through a common shaft. A hand lever imparts feeds to both drills simultaneously. The operator simply places the door on the table and feeds the drills through. It is claimed that thirty doors per hour may be drilled.

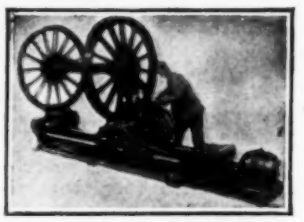
— 12 —

Drilling and Tapping Machine for Locomotive Tires

Armstrong, Whitworth & Co., Ltd., Openshaw, Manchester, England. [Vol.66,p. 157E]

The drilling and tapping machine illustrated is for producing threaded holes for the retaining screws in centers and tires for locomotive and car wheels. The machine will drill and tap either vertically or at an angle. It will take wheels on axles up to 5 ft. 6 in. gage.

Each wheel is supported by two rollers which are necked to suit the flanges of the wheels. By means of a worm and a cir-



cular rack the drilling head can be swivelled 15 deg. from the vertical in one direction and 7½ deg. in the other direction. The drive is by 4-hp. motor through a gearbox giving two speeds controlled by lever.

The floor space occupied by the machine is 12 ft. by 2 ft. 9 inches.

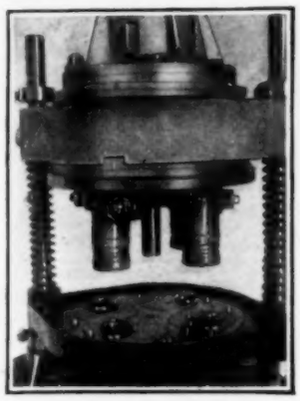
— 13 —

Drill Head, Multiple, Improved

Hey Engineering Co., Park Mansions, Hendon, London, N.W., England. [Vol.65,p.284E]

One of the principal improvements in this multiple-spindle drill head is in the method of effecting the setting of the spindle to the various pitch circles within the capacity of the head. On the outside diameter of the ring are cut graduations which, being carried on a much larger diameter, allow of greater accuracy in setting. It is claimed that spindles can be set to within 0.001 in. on the diameter of the pitch circle.

The downward movement of the head automatically clamps



the work by pressing the jig plate on the work through the springs carried on the guide bars. The work is not released until the drills are clear.

Taper plugs or other members fit into the underside of the jig plate for accurately locating the work.

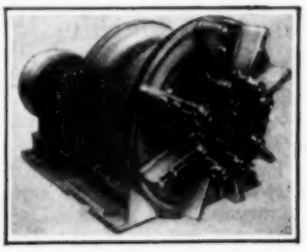
— 14 —

Drill Head, Multiple-Spindle, Heavy-Type

Hey Engineering Co., Park Mansions, Hendon, London, N.W., England. [Vol.66,p.65E]

This universal-jointed head carries eight spindles but is so designed that ten or twelve spindles may be used, if desired. A 6-in. hole extends through the center so that long shafts can be passed through.

A particular feature is the front spindle-carrying plate which is readily detachable and provides a wide range of adjustment, but for repetition work the plate can be specially bored for fixed spindle distances. For cluster holes and for work of a heavy nature the plate can be indexed by a worm meshing with teeth cut on its periphery so that close centers can be drilled.



The head is a complete unit and can be arranged for direct-motor or single-pulley drive. A clutch is provided for stopping and starting the drills. Two- and three-way machines can be designed to carry the head as required. The head will take twelve 1¼-in. drills at the maximum feed. The heads are made in three sizes.

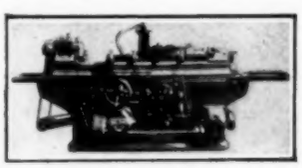
Grinding Machines

— 15 —

Grinder, Plain, Improved, with Belt-Driven Workhead

Churchill Machine Tool Co., Ltd., Broadheath, Manchester, England. [Vol.66,p.15E]

The 10-in. plain grinder, in all sizes from 50- to 96-in. length capacity, has been redesigned in order to meet the requirements of a heavy-duty



machine for production work. Belting over the work table has been eliminated.

Drive to the workhead is self-contained and applicable to countershaft and motor-driven machines. The workhead carries an independent gear box and a belt which is maintained in tension by the weight of a swinging arm. This arrangement provides four speeds ranging from 30 to 167 r.p.m. Twelve table feeds, ranging from 11.6 in. to 192 in. per min., are available.

The standard wheel furnished is 20 in. in diam. by 3 in. wide, but wheels up to 8 in. wide can be used. The maximum swing over the table is 10½ in., and the maximum diameter that can be ground with full-sized wheels is 10 in. The wheel has two speeds. The 10x50-in. machine will grind tapers up to 9 deg. included angle. Its net weight is 7,600 pounds.

— 16 —

Grinders, Plain, Self-Contained, "Naxos-Union"

Selson Engineering Co., Ltd., Charles St., London, E.C., England. [Vol.66,p.182E]

In addition to being designed for plain cylindrical grinding, these machines can be arranged for wide-wheel, cam, crank-

shaft, internal and surface grinding. They are built in sizes to swing diameters of 12, 16, 20, 27½ and 35 in.

The 12- and 16-in. machines can be supplied in nine different lengths of bed, grinding a maximum length ranging from 1 ft. 8 in. to 20 ft. 4 in. The larger machines are furnished in ten different lengths of bed, ranging from a maximum grinding length of 5 ft. 3 in. to 33 feet.

The worktable for machines up to 10 ft. between centers is of the double type, the upper part swiveling for taper grinding. Eight table feeds are provided.

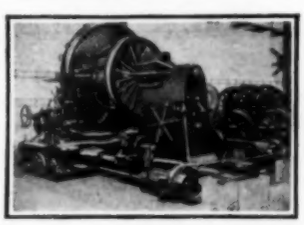
For grinding crankshafts, two similar special heads are mounted on the table.

— 17 —

Grinder, Rotary, Universal, "Schmaltz," for Locomotive Wheel Sets

United Machine Tool Co., Ltd., Holborn Hall, Gray's Inn Road, London, W.C., England. [Vol.65,p.223E]

This is a specialized machine for grinding locomotive axle sets. It operates on the rotary principle in that the revolving abrasive wheel has a planetary motion around the stationary work. The machine is built in three types: The first for grinding inside axle journals and crankpins; the second for grinding outside driving and coupling-rod pins, return cranks, outside journals, and crankpin holes; while the third



combines the features of the first two.

Attention is drawn to the combination motor grinding wheel. This motor consists of a rotor, which carries the grinding wheel, revolving around a stationary field winding. The planetary motion is effected by attaching the grinding head to a rotating ring that runs in adjustable ground guides in the headstock housing.

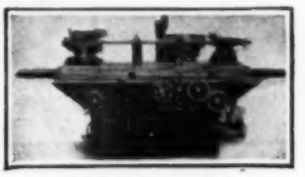
The maximum diameter admitted through the headstock is 54⅜ in. and the maximum crank radius handled is 14½ in. The largest diameter ground is 10½ in., the smallest width being 3⅛ in. and the greatest width 11¾ in. There are five motors in all with an approximate total of 22½ hp. The weight of the machine is about 39¼ tons.

— 18 —

Grinder, Universal

Fritz Wunderli, Uster, Switzerland. [Vol.66,p.166E]

This universal grinder with single-pulley drive is claimed to be capable of undertaking work practically as heavy as that of



the plain machine previously placed on the market. Belt drives are mainly used.

Fourteen different speeds are available both for the workhead and the table movement. The height of centers is nearly 8 in., maximum diameter admitted 14½ in., maximum distance between centers 41¾ in., maximum length ground 39¾ in., diameter of wheel 16 in. The grinding wheel has three speeds ranging from 1,300 to 2,040 r.p.m. About 8 hp. is required. The approximate weight is 5,200 pounds.

The British agents for these machines are Crossley & Co., St. Mary's Gate, Manchester.

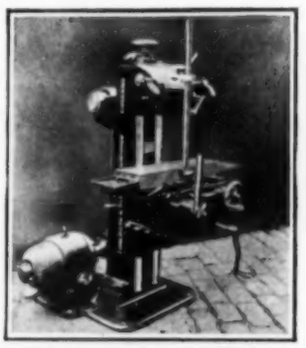
— 19 —

Grinder for Inserted-Tooth Cutters

J. Holroyd & Co., Ltd., Milnrow, England. [Vol.65,p.248E]

The grinding spindle of this machine is double-ended so that inserted-tooth saws and the like may be sharpened both on the sides of the teeth and on the top. The work is held in a special fixture, and the machine will handle cutters up to 36 in. in diameter. The vertical bar shown carries an adjustable tooth rest for steadying the work.

The drive is from a 1-hp. motor and the wheel speed is 4,400 r.p.m. The vertical adjustment of the table is 18 in., the cross adjustment 7 in., and the longi-



tudinal traverse provided is 12 in. The floor space occupied is 4 ft. square, and the machine weighs about 1,225 pounds.

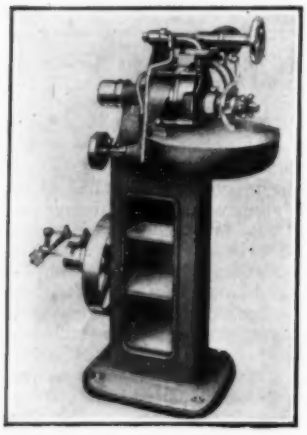
— 20 —

Grinder, Tool

Coats Machine Tool Co., Ltd., Palmer St., London, S.W., England. [Vol.65,p.262E]

This type of tool grinder is now made in two small sizes, the No. 1 size taking tools ⅝-in. square or ⅝x⅝ in., and the No. 2 size taking tools 1-in. square or ⅞x1⅛ inch.

Three motions are provided, namely, two swiveling motions, horizontal and vertical, and a



feed to and from the grinding wheel. The grinding spindle carries a cup wheel running at about 2,500 r.p.m. A rotary pump and tank for supplying coolant to the tool are provided.

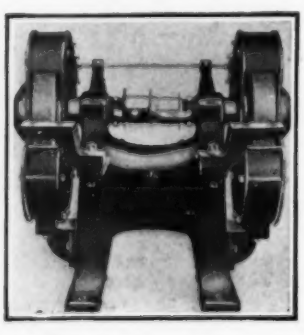
The grinding wheel used in the smallest machine is 4¾ in. in diam. and the floor space occupied by the machine is 26x 24 in., 1½ hp. being required for the drive. The net weight is 300 lb. For the No. 2 machine the grinding wheel is 8 in. in diam. The floor space occupied is 40x28 in., and the hp. required is 3. The net weight is 560 pounds.

— 21 —

Grinder, Floor, Heavy-Duty

Turner Tool Manufacturing Co., Shadwell St., Birmingham, England. [Vol.66,p.130E]

A 20-in. machine, designed for heavy duty in the foundry, has been added to the line of this company. The spindle carries two wheels, 20 in. in diam. by 3½ in. face. The distance between wheels is 30½ inches.



The wheel flanges are half the diameter of the wheel, namely, 10 in. or, if required, 13 in. The body is arranged to permit down drive and the belt shifting gear can be revolved to any convenient position round the pulleys. The drive may be either by tight and loose pulleys or by a double cone pulley and countershaft.

The height of centers from the floor is 30 in. and the net weight of the machine is 820 lb. Modifications can be made to meet the requirements of customers.

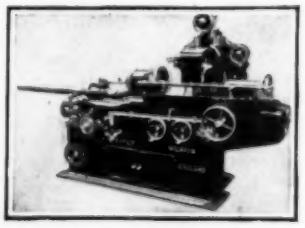
— 22 —

Grinding Machine, Hob and Worm, 12-Inch

J. Holroyd & Co., Ltd., Milnrow, England. [Vol.65,p.201E]

This machine will handle hobs and worms up to 12 in. in diam. by 18 in. long. The abrasive wheel is 7 in. in diam. and runs at a peripheral speed of 6,400 ft. per minute.

With the revolving motion of the work a dividing motion is connected for dealing with multiple worms, and the like,



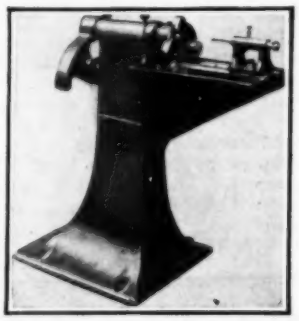
so that when sharpening hobs the abrasive wheel grinds along every tooth face before a further cut is added. The machine can be geared for leads between ⅛ in. and 240 in. The head swivels horizontally through a complete circle, and double vertical-swivel, cross, and vertical adjustments are provided. An attachment for truing the wheels is available. The machine occupies a floor space of 14x5 ft. and weighs about 5,500 pounds.

— 23 —

Grinding Machine, Cock

William Heap & Co., Ltd., Ashton-under-Lyne, England. [Vol.66,p.31E]

These machines are especially adapted for grinding-in cocks of various kinds for steam, air, water and gas. The maximum



squared-end capacity is 2 in. and the maximum length of key admitted is 10 inches.

The drive is by means of a three-step cone pulley. Floor space occupied by the machine is 4 ft. 3 in. by 2 ft. 6 in. and the net weight is 900 pounds.

Lathes

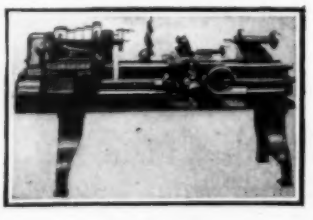
— 24 —

Lathe, Engine, 13-In. Swing

Holbrook & Sons, Stratford, London, E., England. [Vol.66, p.4E]

This company has introduced a cone-pulley lathe which swings work 13 in. in diam. over the bed and 36 in. between centers, 9 in. being swung over the saddle and 24 in. in the gap, which is 6½ in. wide from the faceplate.

With sliding back gears and a two-speed countershaft, twelve spindle speeds are available, the range being from 15 to 400 r.p.m. The quick-change gear box gives thirty-two direct feeds, and threads from 2 to 28 per in., inclusive, can be cut. The lathe takes about 1½ hp. and weighs 1,750 lb. net.



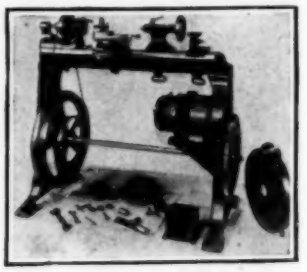
— 25 —

Lathe, Instruction, 5-Inch

Henry Milnes, Bradford, England. [Vol.66,p.125E]

This small lathe for school training purposes follows the usual present practice. A self-contained motor is used for the drive.

A range of five speeds is transmitted to the headstock through a ⅜-in. round belt. The



top slide has a graduated base for taper turning, and the tool is clamped by a single-stud toolholder with adjusting screw. The height of centers is 5 in. and the length of bed 3 ft. 6 in., admitting work 2 ft. long between centers.

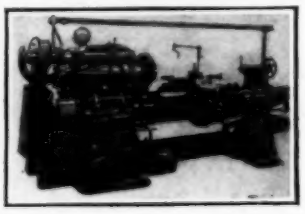
— 26 —

Lathe, Toolroom, 8½-Inch, Motor-Driven

Dean, Smith & Grace, Ltd., Keighley, England. [Vol.66,p. 130E]

The special features of this lathe include the arrangement of the driving motor and the new section of the bed, which is a combination of vee and flat shears. The machine admits work 2 ft. 3 in. long between the centers and swings 18 in. over the bed and 11½ in. over the saddle.

The fast headstock is driven by a belt from a 4-hp. motor



Friction clutch and brake are fitted for starting and stopping. The twelve spindle speeds range from 15 to 360 r.p.m. A gearbox of quick-change type provides forty pitches of screw-cutting from 2 to 28 th. per in. Metric pitches may be cut by the use of change wheels. The box gives twenty feeds with a range of 23 to 80 rev. of spindle per in. of traverse. The lead screw is guaranteed in the aggregate to be within +0.001 in. or —0.002 in. in a length of 6 ft., and not to exceed +0.0006 in. or — 0.001 in. in any foot.

— 27 —

Lathe, All-Geared, Surfacing

Roberto Zust, Intra, Italy. [Vol.66,p.185E]

This machine is an all-geared surfacing lathe driven by variable-speed d.c. motor and single

pulley. It is also built with a tailstock.

The height of centers is 700 mm. (27½ in.) and the swing 1,150 mm. (45¼ in.) over the cross slide and the bed will accommodate a length of 2,000 mm. (78¾ in.) between centers.

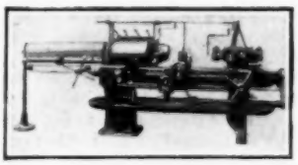
The headstock gives twelve speeds and the face-plate bears a driving gear at the back. The approximate weight is 8,600 kg. (nearly 19,000 pounds.)

— 28 —

Lathe, Turret, Hexagon, 2 x 30-Inch

H. W. Ward & Co., Ltd., Birmingham, England. [Vol.65, p.216E]

This company has introduced a hexagon turret lathe with single-pulley all-geared headstock for bars up to 2 in. in diameter, the turret having a longitudinal automatic feed of 30 in. The height of centers



is 7 in., and the hole through the spindle is 2¼ in. in diameter. With the pulley running at 750 r.p.m. the head provides eight spindle speeds forward and reverse, ranging from 25 to 520 rev. per minute.

The turret admits 40 in. between its face and the spindle nose and is hexagonal in form. 10⅜ in. across the flats, each turret face being 6½ in. x 4¾ in., while the holes are 2½ in. in diameter. Ten feeds ranging from 12 to 270 cuts per in. are available. The standard equipment includes a combined bar stop and sensitive center drilling attachment, roller steady turning toolholders, roller steadies, die heads, and the like.

The lathe takes about 5 hp. to drive, occupies a floor space of 13 ft. x 3 ft. 9 in. and weighs about 3,100 pounds.

— 29 —

Lathe, Axle-Journal, Re-Turning and Burnishing

Ward, Haggas & Smith, Keighley, England. [Vol.65,p. 248E]

The machine was designed for turning railway axles on their journals with the wheels in place. The lathe admits axles up to 6 ft. 6 in. long between centers and wheels up to 4 ft. in diam. The bed has a wide gap in the center for the driving head.

Each saddle is controlled by an independent feed box giving four positive feeds, from ¼ to 2 in. per min. The driving head is driven by a 12-hp. motor through double gears, giving two speeds.

The two axle journals are first re-turned, after which the lathe is speeded up and burnishing rollers brought into op-

eration. Grinding heads can also be used instead of the burnishing rolls.

If required, a pulley drive can be substituted for the motor drive; also a sliding bed can be embodied in the design so as to vary the gap.

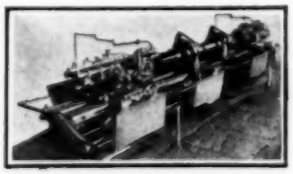
The machine is for axles having outside bearings. A similar machine can be supplied for axles with inside bearings. The weight of the machine is 7 tons and it occupies a floor space of 16x4½ feet.

— 30 —

Lathe, Duplex, for Printing-Press Rolls

J. Holroyd & Co., Ltd., Milnrow, Rochdale, England. [Vol. 65,p.258E]

The special duplex lathe is for turning the two ends of printing rollers simultaneously. The roller is supported in 4-jaw



chucks from which the roller ends project and are turned by means of turrets carrying the necessary tools.

The height of centers is 11 in. and the bed is 20 ft. 4 in. long. The machine is driven by a 15-hp. variable-speed motor which drives a gearbox providing two speeds. The spindle speeds range from 52.4 to 297 r.p.m. The saddles have power traverse along the bed as well as hand adjustment.

The turrets are hexagonal. Double gears on the apron provide eight feeds to the saddles in each direction. The left-hand turret is arranged to slide across the saddle from the center so as to enable the work to be inserted and withdrawn from the chucks.

The floor space occupied is 21x8 ft. and the machine with motor weighs 15,000 pounds.

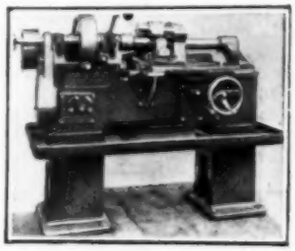
— 31 —

Lathe, Profile, Turning and Forming

B.S.A. Tools, Ltd., Sparkbrook, Birmingham, England. [Vol.66,p.53E]

Single and double-ended profile turning lathes for semi-automatic production of a large variety of parts are being made. The movements of the cutting tools are automatic and the tooling is arranged so that the job is completely machined in the time taken by the longest cut.

The single-ended machine turns work up to 3½ in. in diam. by 14 in. long. It is manufactured with both back-geared and plain heads. The feed is varied by means of pick-off



gears. Stop can be set to trip the drop worm operating the feed.

Attached to the front of the bed are two brackets to carry a former controlling the front tool slide on the carriage. At the back of the machine is a second former so that facing and recessing operations may be undertaken simultaneously with the turning operations done by means of the front former.

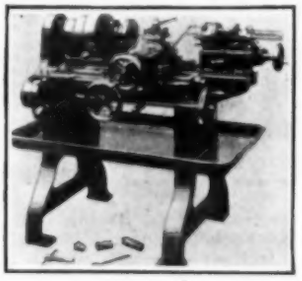
The double-ended machine is similar in design and operation but two saddles are used and the work is held by means of a central chuck, driven by double-helical gearing. The machine turns work 2 in. in diam. by 36 in. between centers.

— 32 —

Lathe, Locomotive Mud Plug

William Heap & Co., Ltd., Ashton-under-Lyne, England. [Vol.66,p.60E]

The lathe has been designed for the production of taper mud-plugs for locomotives. The plug is turned, screwed and



drilled for center in 2½ min. total floor-to-floor time. The machine will also tap the center holes in the plugs. The maximum length of taper that can be turned is 6 in., and the maximum taper 2½ in. per ft.

The driving headstock carries a three-step cone pulley. The box section bed is extended at the front to carry the front slides, while on the back shear is the taper-turning attachment.

The longitudinal slides have hand traverse and also automatic movement. A gear drive is arranged from the spindle to a box providing two feeds, a sliding and a screw-cutting feed.

The cross slide carries a four-tool turret. There is also a capstan slide at the right-hand end of the bed with provision for four tools or three tools and a center.

A two-speed countershaft enables screwing and tapping to be done on the capstan slide.

Milling Machines

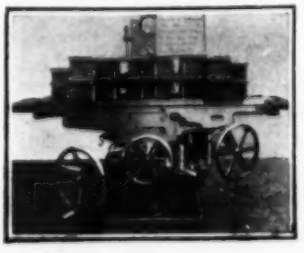
— 33 —

Rapid Power Traverse on Horizontal Miller

Alfred Herbert, Ltd., Coventry, England. [Vol.65,p.280E]

This company has equipped all its milling machines with rapid power traverse for the longitudinal motion of the table, so as to increase the production of the machine.

The No. 22 plain horizontal miller is shown equipped with this drive. The quick power motion moves the table at the



rate of 150 in. per min. This traverse is independent of the feed and is controlled by a single lever conveniently placed. The lever is moved in the direction in which the table is required to travel.

— 34 —

Milling Machine, Special-Purpose

J. Holroyd & Co., Ltd., Milnrow, England. [Vol.65,p.258E]

This machine is for the milling of slots in type cylinders for printing machinery. It will take work 9 ft. long of a maxi-

mum diameter of 24 in. The maximum length of slot finished is 3 feet.

The bed carries supports for the work, which is stationary, and four traveling cutter heads. The cutter heads are carried on the uprights in heavy castings, which operate on a radius slide.

The cutters are driven at speeds ranging between 100 and 200 r.p.m. by means of a variable speed motor. The in-feeds provided range from 0.002 to 0.007 in. per revolution.

The uprights carrying the heads have automatic longitudinal feed in either direction. In addition, hand and power motion along the bed is also available.

The drive to the machine is by a 10-hp. motor. The floor space occupied is 21x9 ft., and the weight of the machine 14½ tons.

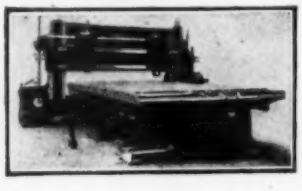
— 35 —

Milling Machine, Plano-Type, Special-Purpose

J. Holroyd & Co., Ltd., Milnrow, England. [Vol.65,p.259E]

This plano-type milling machine is for facing the sides of printing machine frames and other large objects. It will handle work 2½ ft. high, 8 ft. wide and 16 ft. long. The bed is 26 ft. long and has four sliding ways. The table has a working surface of 16x8 feet.

The table has the necessary T-slots and is driven by a sta-



tionary screw. The two uprights are tied at the top by a stiff cross stay, and carry a stout cross-slide, which is moved up and down by power. A slide head is also provided.

The spindles have independent vertical adjustment of 9 in., and can be locked in position. Both power and hand traverse are provided for the head, as well as automatic feeds. The spindle speeds can be varied from 6 to 48 r.p.m. in nine steps.

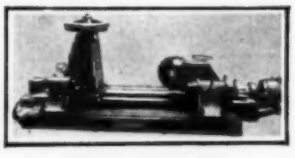
Two motors are employed for driving purposes, the main driving motor being of 30 hp., and the feed motor 5 hp. The power traverse is at the rate of 120 in. per min., and the feeds range from 1 to 9 in. per minute.

— 36 —

Milling Machine, Keyway, Locomotive Crank-Axle

Hulse & Co., Ltd., Ordsal Works, Salford, England. [Vol. 66,p.17E]

The motor-driven duplex keyway milling machine is used for simultaneous cutting of keyways in both ends of locomotive crank-axles at 90-deg. right-hand lead. The machine



takes axles from 5 in. to 10½ in. in diam. and from 3 ft. to 8 ft., 6 in. long.

The spindles run at 90 r.p.m., and the maximum diameter of end mills taken is 3 in. The range of self-acting feeds along the bed is ¾ to 5½ in. per min. The machine has a box-form slide bed with square gibs, and on it are mounted two upright frames carrying the milling heads, one vertical and one horizontal, each being adjustable transversely and vertically. The slide bed is integral with the baseplate on which are mounted the two supporting headstocks, one having a dead center and the other a forcing screw with handwheel.

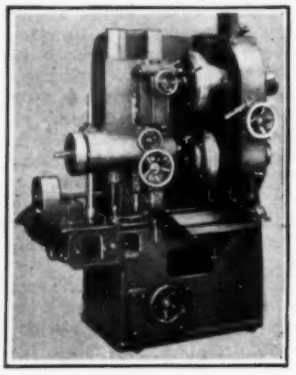
The drive is by a 15-hp. motor, self-contained.

— 37 —

Milling Machine, Cam

Smith & Coventry, Ltd., Manchester, England. [Vol.66, p.45E]

The cam milling machine is designed for the milling of external and grooved face cams and is of the profiling type.



The head is mounted on a standard integral with the bed of the machine. Two faceplates and spindles are provided, and on the upper plate is mounted the master cam which is brought into contact with a copying roller on the corresponding spindle.

In operation the copying roller spindle and the cutter spindle move as a unit. The movement of the cutter head is transmitted from the master cam through a cantilever attachment embodying a swinging weight of variable radius. Rapid rises or falls in the contour of the work are easily negotiated, and a flywheel located at the rear of the cutter spindle insures an even cutting motion.

Another feature of the machine is the provision for working on a duplex system, in which case faceplates are mounted at the outer end of the existing spindles.

Three spindle speeds are available, with variations of feed to suit. In the machine shown the maximum radius of cam is 13 in. and the maximum width 2 inches.

— 38 —

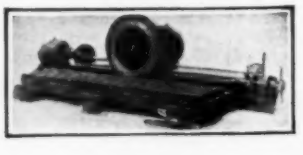
Milling Machine, Girder

Ward, Haggas & Smith, Keighley, England. [Vol.66,p. 140E]

This milling machine is designed for dealing with built-up girders and plates with flat surfaces. The makers claim that work can be trimmed off much quicker than by ordinary planing.

Articles of any length can be machined as the cutterhead is traversed, while the work is stationary. The job is completed at one traverse, if the head is large enough. There is a quick power reverse through gears and clutch.

The bed is 11 ft. 2 in. long by 20 in. wide. Projections



bolted to the bed, provided with T-slots, support the webbed work table, which is 30 in. wide and is adjustable to or from the cutterhead. The drive is by 15-hp. constant-speed motor. The floor space required is 15x7 ft. and the weight is about 6½ tons.

— 39 —

Milling Cutter, Interlocking

Brayshaw Furnaces and Tools, Ltd., Hulme, Manchester, England. [Vol.66,p.92E]

In place of the usual castellated interlocks resembling clutch teeth, these milling cutters have interlocking faces of wavy contour with high and low parts. Usually one cutter in a pair has three high and

three low places. Increased strength is claimed. There are no sharp internal angles on the interlock and no sudden changes in the thickness of the cutters, so that lines of weakness are not developed.

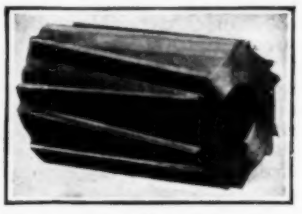
Very narrow cutters can be supported by a boss of large diameter extending as far as desired toward the teeth, or even overlapping them. The depth of interlock can vary from a few thousandths of an inch to as much as ½ inch.

— 40 —

Milling Cutter

E. Rohner, Rheineck, Switzerland. [Vol.66,p.156E]

The Tscherne special milling cutter is made of high-speed steel in any size required, the form of tooth being normal.



The special feature of the cutter is that the teeth are inclined 6 deg. to the axis, with adjacent teeth in opposite directions. Other cutters, such as side milling cutters, can be made on the same principle.

This cutter is made in one solid piece by the aid of a new special machine. Besides increased production, it is claimed that vibration is minimized. The agent in Great Britain is H. G. Furlong, 104 High Holborn, London, W.C.

Planers and Shapers

— 41 —

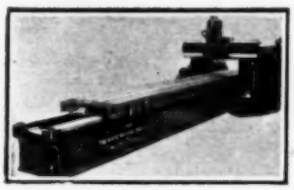
Planer, Rail, Motor-Driven

White Machine Tool Co., Ltd., Halifax, England. [Vol. 65,p.222E]

The motor-driven rail planer takes work up to 19 ft. long by 3 ft. wide and 14 in. high, and is driven by a 20-hp. reversing motor. Cutting speeds vary from 30 to 50 ft. per min. and the return speeds from 55 to 90 ft. per minute.

The bed is of box section and is 29 ft. 6 in. long on the planed surface, so that there is little overhang of the table.

The housings are carried down to the floor level and the



cross-slide fits both the front and inside of the housings. The tool head has both hand and power reversing feeds in vertical and horizontal directions, and has two adjustable taper gibs to take up wear.

A selective handle arrangement is provided for engaging the feeds. The machine is driven by all-spiral transmission gears. The main spiral, which meshes with the table rack, is forged solid and is hardened and ground.

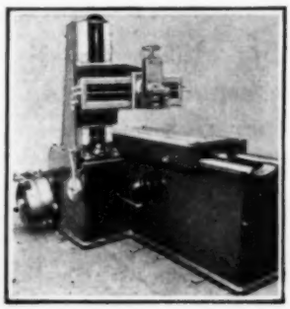
The net weight of the machine, without the electrical equipment, is 12 tons.

— 42 —

Planer, Open-Side, Crank, 32-Inch Stroke

Butler Machine Tool Co., Ltd., Halifax, England. [Vol. 65,p.263E]

The 32-in. stroke open-side crank planer fits work up to 24 in. wide by 22 in. deep. The stroke can be quickly adjusted from 4 to 32 in. and can operate on any part of the table, which is 4 ft. by 23 in. wide.



As the machine is operated by crank motion it is claimed to possess all the advantages of a shaper. It is driven by belt to a tight and loose pulley. Six speeds are provided from 4½ to 42 strokes per minute.

The saddle can be adjusted up and down the upright by hand. The head has also hand adjustment, as well as automatic feeds, both horizontal and vertical.

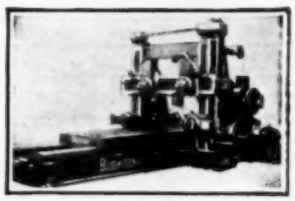
All the gears are of machine-cut steel, except the large driving wheel, which is of cast iron. All shaft bearings are bushed with bronze. The floor space occupied is 1½x5½ ft. The overall height is 7 ft. 3 in., and the approximate net weight is 700 pounds.

— 43 —

Planer with Spiral Gear Drive

J. Buckton & Co., Ltd., Leeds, England. [Vol.66,p.29E]

This planer will admit work 10 ft. long by 4 ft. wide and 4 ft. high, and is driven by a 25-hp. reversing electric motor. On the cross-slide are two tool heads which have power feed motions for horizontal, vertical and angular cuts, and in addition there is one tool head on each upright, with power feed



motion and horizontal and angular traverse by hand. Cutting speeds are obtainable from 20 to 80 ft. per min., and return speeds up to 160 ft. per minute.

The table is driven by an all-spiral gear from the main motor. A separate 3-hp. motor is used for the power feed and quick traverse on the tools. All motions can be reversed. The amount of feed is independent of the speed or amount of the table travel, and is effected at the end of the return stroke. The cross-slide heads can be traversed independently of each other, or simultaneously in the same or opposite directions. A circular dial with tappets effects the reversal of the table and the operation of the feed gear.

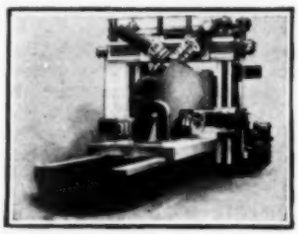
The electric drive includes a speed-accelerating device for use in gaps on the lengths to be planed. Push-button control is available on both sides of the machine.

— 44 —

Hiloplane for Locomotive Cylinders

J. Stirk & Sons, Ltd., Halifax, England. [Vol.66,p.102E]

The capacity of this special planer is 6 ft. 3 in. in width by 6 ft. in height and 18 ft. in length. The machine weighs about 40 tons. It has a special



device attached to the near side head for planing radiused boiler seatings. The radiusing device can be removed from the side head and placed on the near cross-slide head, if desired. In fact, all four heads are completely interchangeable, so that the locomotive cylinder may be set in any conceivable position on the machine.

The drive is by the Stirk split-field system through change gearing and a rack. The bed has flat sliding ways and a continuous top plate. The control of the stroke is by a disk and master switch embodying an inching button for setting work. Dogs actuate the reversing lever of the master switch.

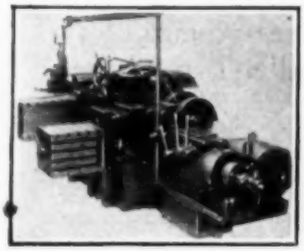
A supplementary motor is used for power traversing the heads and elevating the cross-slide, and also gives the power feeds. Quick change feeds ranging from ½ to 1¼ in. are provided. All the planed surfaces can be dealt with at one setting of the cylinder.

— 45 —

Shaper, Traversing-Head, Improved

Ormerods Tool Co., Ltd., Hebden Bridge, England. [Vol. 66,p.68E]

This traversing-head shaper has a variable stroke from 14 to 16 in. The bed is 6 ft. long, 22 in. wide across the top and 2 ft. 10 in. deep. The guide ways for the saddle are of V-section. The saddle has both



hand and power traverse along the bed of 3 ft. 9 in. Four rates of automatic feed are obtained from a cam. The box-section ram is centrally driven by means of a quick-return link motion.

The toolhead down feed is 6 in., and it can be swiveled through 180 deg. on the end of the ram. Worm and quadrant motion is available for internal curved work, and the automatic, vertical or angular feed motion is operated from the side of the ram.

The two box-section worktables are 18 in. long by 15½ in. wide by 14 in. deep. The aprons and tables are adjustable along the front of the bed, and the tables are adjusted up and down the apron faces.

The drive is by a 4-hp., constant-speed motor to an eight-speed gearbox. The floor space occupied is 10 ft. x 6 ft., and the weight, exclusive of the motor, is about 5,600 pounds.

— 46 —

Shaper, Traversing-Head, Double

Graham and Normanton, Halifax, England. [Vol.66,p, 184E]

This 14-in. stroke machine is particularly adapted to performing small shaping operations at high speeds, or a series of such operations on large pieces of work.

The two traversing heads are independently driven through four-speed gear boxes with sliding gears and spur gears and separate shafts running the full

length of the bed. The maximum and minimum centers of the heads are 7 ft. 7 in. and 1 ft. 3 in., respectively. Work 16 in. deep can be admitted between the table and the underside of the ram. The bed is 10 ft. long by 18 in. wide by 33 in. deep. It has V-guide ways at the top for the saddles and planed slotted ways at the front for supporting the two aprons and work tables. Each ram is centrally driven by a Whitworth motion.

The ram has four speeds of 14, 22, 35 and 56 cycles per min. Feeds from ¼ to ⅛ in. are available. The work tables are 18 in. long by 15 in. wide by 12 in. deep and are carried on aprons that are adjustable horizontally and vertically.

The machine requires approximately 5 hp. for each head. The floor space occupied is 15 x 6 ft. and the weight is 7,500 pounds.

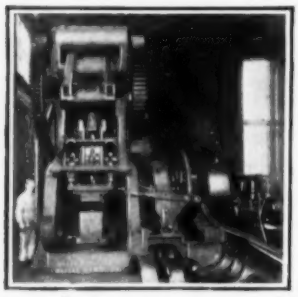
Presses

— 47 —

Press, Drawing, for Automobile Fenders

Taylor & Challen, Ltd., Birmingham, England. [Vol.65,p. 261E]

The No. 9 toggle drawing press has been adapted for the production of automobile fenders. The movement of the press slide is completely under control of the attendant by



means of a friction clutch and brake. The tools are slid on to the bed and the press brought to bottom center. The punch and pressure plate are then coupled up and the press raised to the starting position ready for work.

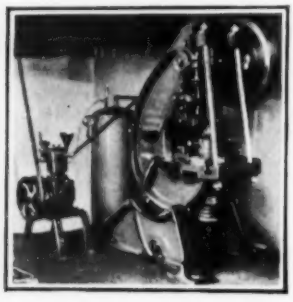
The inserted blank is gripped between the outer slide blank holder and the die by the toggle mechanism of the press. In addition, as the punch descends, the metal of the blank is pinched between the extractor and the punch, so that the whole stamping is supported and there is no chance of any puckering forming in the stamping. The extractor is actuated through two air cylinders which are operated by means of a compressor driven off the back shaft.

— 48 —

Press, Inclinable, with Pneumatic Die Cushion

Taylor & Challen, Ltd., Birmingham, England. [Vol.66,p. 33E]

The No. 370 inclinable press has a compressed air cylinder placed under the bed, which is



used for the production of seamless drawn metal cups. The air is obtained from a small compressor, driven by belt from the countershaft. An air receiver, with stop valve, relief and blow-off valves, is provided, and the required pressure, ranging from 5 to 100 lb. per sq.in., is automatically controlled.

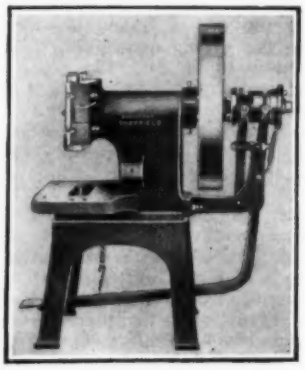
The blanks to be dealt with are held under constant air pressure between the punch and pressure ring, and the articles produced on the press are delivered free from puckers.

— 49 —

Clutch, Automatic, for Power Press

W. Forrest & Co., Sylvester Gardens, Sheffield, England. [Vol.65,p.293E]

This automatic release clutch is applicable to power presses and punching machines of the pin or dog-clutch driven type, operated by foot lever. The clutch is shown applied to a 1-ton power press. It stops the



machine automatically at the top of the stroke, even if the foot lever be kept down, and the machine cannot repeat the stroke until the operator allows the lever to rise and again depresses it.

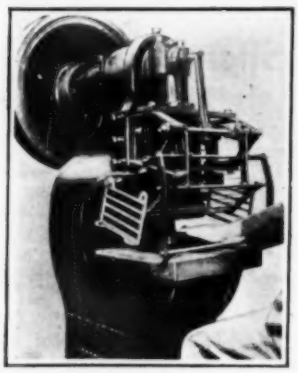
The device enables the operator to stop the press at will at any part of its stroke by simply removing his foot. The press can also be run continuously, if desired. To enable marked-out pieces to be located before actual punching, an adjustable trip can be set to stop the punch at any desired height.

— 50 —

Press Guard, Stiles-Type

J. P. Udal, 45 Upper Dean St., Birmingham, England. [Vol.66,p.32E]

The guard is shown fitted to a Stiles-type press. Since the crankshaft is at right angles to



the line of the guard, the first connecting rod drives a plunger, which is guided in plates connected to the guard brackets. From this plunger the rocking lever of the guard is driven by a short connecting rod at right angles to the first. In this way the advantages of a crank-drive with overhanging crankshafts are available to Stiles press guards.

Before the punch gets to danger, the guard moves the hand back from the tool. The guard can be adjusted to suit varying sizes of tools and can be readily swung out of the way.

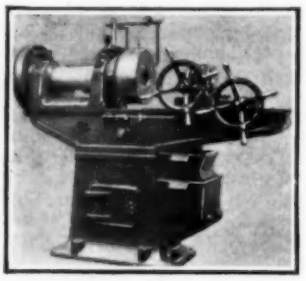
Threading Machines

— 51 —

Threading Machine, Automatic

Thomas Chatwin, Ltd., Great Tindal St., Birmingham, England. [Vol.66,p.30E]

The automatic threading machine illustrated has a capacity for bolts from ¼ to 2 in. Whitworth, and British standard



pipes from ¼ to 3 in. The drive is by a four-step cone on the back shaft through gearing to the spindle. Eight spindle speeds are available.

The diehead is opened and closed automatically by a lever which is actuated by the movements of the saddle. The setting of the diehead for different diameters is effected by loosening the locking nuts and rotating the came ring on the spindle. On the periphery of the cam ring is a scale, and a chart is supplied showing the corresponding bolt sizes.

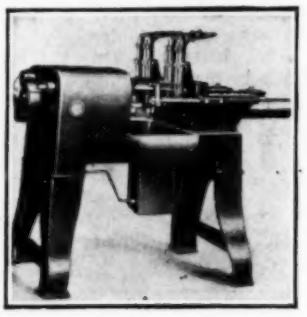
The vise is actuated by a right- and left-hand screw. The jaws carry renewable hardened cast steel serrated gripping blocks.

— 52 —

Nut Tapper, Semi-Automatic

Burton, Griffith & Co., Ltd., Vauxhall Bridge Road, London, S.W., England. [Vol.66,p.106E]

The semi-automatic nut tapping machine deals with round, square or hexagon nuts, the



magazine attachment being changed to suit the different shapes. It is completely automatic, except that the nut blanks must be fed into the magazine by hand.

The nuts pass continuously along the tap and are automatically released at the shank end. Machines are built with two or four spindles, with capacities of ¼ to ⅝ in. and ⅛ to ⅜ in., respectively. On the two-spindle machine an output of about 25,000 nuts per hr. can be obtained, while on the four-spindle machine 12,000 ⅜-in. nuts can be produced per hour

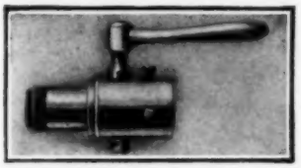
Suitable speeds are provided for tapping iron, steel or brass, and the changes are effected by cone pulley on the smaller machine and change gears on the larger. The smaller, or two-spindle machine, weighs 815 lb. and occupies a floor space of 43x20 in. It requires a ½-hp. motor for driving, while the larger, or four-spindle machine, requires a 1½-hp. motor for driving and occupies a floor space of 59x32 in. It weighs 1,430 pounds.

— 53 —

Ring Holder for External Threading Operation

John Ackworthie & Co., Ltd., Coleshill St., Birmingham, England. [Vol.65,p.204E]

The appliance is for the purpose of holding ring and shell work that requires threading



on the outside diameter and cannot be held satisfactorily by other means. The rings or shells are placed over the collet, which is expanded by a lever.

The collets are interchangeable and adjustable, and will take rings up to 4 in. in diam. The attachment fits over the barrel of an ordinary lathe. In threading the ring the work is fed straight through the die and the collet then released.

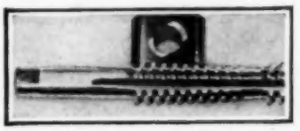
— 54 —

Taps, Square-Thread, Free-Cutting

Hartex-Werkzeug, Berlin, Germany. [Vol.66,p.36E]

This line of improved taps is for square and similar threads where the tops or roots are flat. The cutting edge for each thread groove is split into a series of small cuts which all combine on the different lands of the tap to form the complete thread. It is claimed that by so distributing the cutting effort it is possible to employ taps on much heavier threads than would otherwise be possible. The thread is finished by a number of complete cutting threads at the back portion of the tap, which is passed straight through the hole.

For threads of high accuracy, the special correcting tap illustrated with ground threads is



used. The work is first tapped with a roughing tap and then corrected. The finishing cut removes only a small amount of metal. The tap is piloted by a front guiding portion, and the back part performs the sizing operation on the thread.

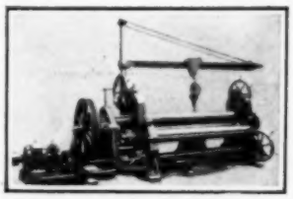
Other Machines

— 55 —

Bending and Flattening Machine, Plate

Scott Bros. (Halifax), Ltd., Halifax, England. [Vol.66,p.121E]

The motor-driven plate bending, straightening and flattening machine combines the usual three-roller plate-bending machine with a four-roller plate-flattening machine. It will handle steel plate up to 10 ft. wide by ¾ in. thick. The foundation plate, 21 ft. long by 5 ft. 6 in. wide by 5 in. deep, made in



one casting, bears four standards for supporting the rolls and driving gearing. The three bending rolls are arranged in pyramid formation. The pressure on the plate is applied by the top roller by means of pilot handwheels, each end of the roller being adjusted separately.

The top roll tilts for rolling cones, and the top half of the outer standard on the right swings sideways, to permit the withdrawal of the tubes when formed. The fourth, or flattening, roll can be traversed up and down inclined slides in front, and is brought into operation on the top side of the plate alongside the top bending roll. The fourth roll may also be employed for bringing back a sweep of large radius.

The drive is by a 27-hp. motor, which has a magnetic brake and drum-type reversing controller. Including the crane, the machine weighs about 21 tons.

— 56 —

Broaching Machines, Screw-Operated

Selson Engineering Co., Ltd., Charles St., Hatton Garden, E.C., England. [Vol.65,p.294E]

The Dolze & Slotta broaching machines are being marketed by the above company. Four sizes are available. The broach is actuated by a screw, and on the completion of the draw or cutting stroke the broach is automatically released from the carriage and returns to the operating position by sliding on an inclined support offered by two rollers. The drive is by belt to a three-speed gear box.

The broach carriage is actuated by twin screws which rotate in stationary nuts in the carriage. The broach is attached to the carriage at a point midway between the screws, so that an even pull is assured.

The roller support for returning the broach to the operating position after each cut consists of a frame carrying two rollers covered with leather. The frame pivots on the axis of the rear roller and is held in the normal position by an adjustable balance weight. It can swing down under the weight of the broach.

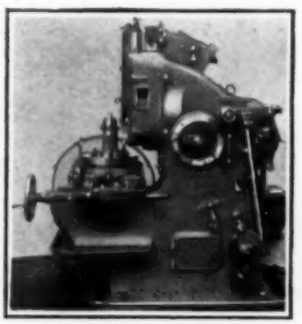
On the smallest machine the amount of metal removed per stroke at the fastest speed is 0.055 cu.in., and the largest keyway cut at this speed is ¼x¼ in. by 1⅞ in. long. The largest machine will remove 6.62 cu.in. per stroke, with a maximum keyway of 1¼ in. by ⅞ in. by 11½ in. long. All four sizes have cutting speeds of 3, 6 and 9 ft. per minute.

— 57 —

Gear Slotter, Maag, Improved

Sulzer Bros., 31 Bedford Square, London, W.C., England. [Vol.65,p.208E]

The modified Maag gear slotter has been speeded up to run at 180 strokes per min., and hence the construction has been



strengthened. The machine is intended for the rapid production of narrow-faced gears up to 1½ in. wide.

The cutter slide is balanced by a coil spring of large diameter carried in a housing situated at the top of the column. The spring is connected to the slide by a flexible steel strip which passes over an involute cam.

The lead-screw nut is made in two parts: One-half is connected to the shaft, the rotation of which turns this half nut against the other, thus creating the necessary pressure on the flanks.

An improved method of holding the blanks is also used.

The cutter can be adjusted for parallelism, and the table can be accurately set by means of a scale on the bed of the machine. The tooth depth is independent of the outside diameter of the gears.

— 58 —

Hammer, Flexible-Shaft Driven

S. H. Morden & Co., Ltd., 18 Dartmouth St., London, S.W., England. [Vol.66,p.180E]

An addition to the range of "Flextol" tools driven by flexible shafts is a mechanically-operated riveting hammer driven

by a ¼-hp. motor. The tool is provided with the firm's special connection for attaching to the end of the flexible shaft so that it may interchange with the present range of tools. The hammer is suitable for light riveting, chipping steel, trimming castings, trimming metal parts after welding, stone-dressing, boiler-scaling, wood-cutting, and the like.

The outside diameter of the body is 2¼ in., the overall length 10 in., and the weight 5 pounds. The hammer delivers about 6,000 blows per minute. It converts the rotary motion to a reciprocating one by means of a face cam operating against a compression spring.

It is claimed that 5 oz. of metal were removed from a mild steel plate in five minutes.

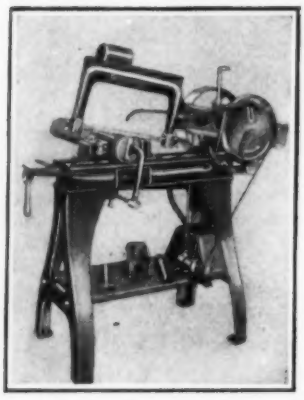
— 59 —

Hack Saw Machines

New Fortuna Machine Co., Ltd., Southmead, Bristol, England. [Vol.66,p.128E]

Two types of sawing machines are made in sizes to handle work 6 in. and 8 in. square. The machines are arranged with pump and tank. The pump is driven by a round belt from the main driving shaft, and the bed of the machine carries an integral tray which provides a direct passage to the sud tank.

The starting lever is brought from a position near the driving pulley to a more convenient place in front, near the operating position. The saw frame is partly released on the return stroke and an automatic stop throws out the clutch at the completion of the cut. The machine is also arranged for self-contained motor drive.



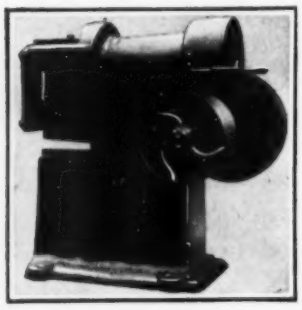
Machines of both types are fitted with a universal swiveling vise to which V-jaws may be attached for multiple cutting. The 6-in. machine has a blade of 12 in. The floor space is 48x20 in., and the net weight 288 lb. For the 8-in. machine, the saw blade is 14 in., the stroke being adjustable to 6 in. The floor space required is 50x 20 in. and the approximate net weight is 298 pounds.

— 60 —

Cropper, Bar, Single-Ended

Scott Bros. (Halifax), Ltd., Halifax, England. [Vol.66,p. 16E]

The chief feature embodied in the single-end bar cropper is the direct worm drive. The worm shaft and driving pulleys are placed at right angles to the main casting. The outer end of the worm shaft carries a



heavy 20-in. flywheel for balancing, while the worm box forms part of the body casting. The steel worm runs in an oil bath. The cast-iron wormwheel is keyed to a steel eccentric shaft. The worm is driven by a tight-and-loose pulley provided with a belt shipper.

The pulleys run at 450 r.p.m. to give 27 strokes per min. to the ram. The cutting blades are set parallel with the eccentric shaft, to allow long lengths of material to be cut off. The machine will cut bars or plates 5x½ in., or 8x⅜ in., or 1¼-in. round or square bars.

The machine occupies a floor space of 4 ft. by 2 ft. 8 in., and weighs about 2,600 pounds.

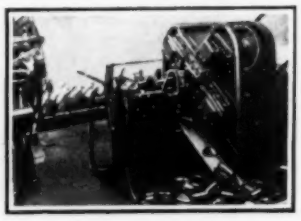
— 61 —

Trimming Machine, Flat Edge, Four-Slide

Taylor & Challen, Ltd., Birmingham, England. [Vol. 66,p.26E]

This four-slide flat-edge trimming machine is used for removing, in one operation, the surplus metal from stamped and drawn articles of any shape.

Only two operating levers are required, the lever at the right operates the tailstock slide, which places and holds in position the pallet plate against which the articles are sheared. On the withdrawal of the pallet plate, the articles are



stripped off against a fixed plate. The main starting lever, which is also linked up with the brake control and the ejector gear, has a safety bolt which permits the press to start only when the tailstock slide is in the correct position.

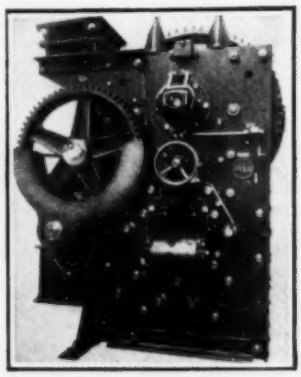
The machine measures 63x44 in., and will handle material up to 6 in. square by 5 in. deep by No. 16 gage, the output being at the rate of 6 per minute.

— 62 —

Shears, Billet, Heavy-Duty

Henry Pels, Osnaburgh St., London, W., England. [Vol. 66,p.134E]

The heavy-duty billet shears is self-contained with electric motor drive. The frame is built of high-tensile armor plates fitted together by bolts, no rivets being employed. A feature of the machine is the improved stop motion whereby the shearing slide operates continuously or is automatically disengaged



for arresting the shear slide at the top of each stroke.

The shearing slide is balanced by helical springs, and works in adjustable guides faced with thick bronze plates. At the rear of the machine is carried an adjustable stop arrangement for controlling the length of billets cut.

The machine is designed for a continuous shearing pressure of 400 tons, and handles rounds up to 4½ in., squares up to 4¼ in., and flats 10x2¼ in. or 14x1¾ in. The number of strokes is 13 per minute.

The power required for belt drive is about 22 hp., or in the case of geared motor drive 26 hp. The floor space occupied is 8 ft. 8 in. by 8 feet.

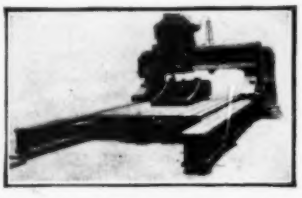
— 63 —

Slotting Machine, Special, for Printing Machinery

J. Holroyd & Co., Ltd., Milnrow, England. [Vol.65,p.60E]

This special slotting machine is for finishing the seatings of the bearing caps for printing machine frames. The work is bolted to a stationary table, which is 8 ft. 2 in. wide by 20 ft. long, and the tool is traversed over it.

Two side uprights bearing the cross-slide are traversed along the bed by means of twin racks.



The width between the uprights is 9 ft. 5 in., and the distance from the table to the cross-slide is 2 ft. 10 in. The ram is carried in the head and reciprocated by a screw.

On the back of the cross-slide are carried the motor-generator set and the motors for the power traverses and feeds. All the switchgear is carried on the head or cross-slide with push-button control.

The length of stroke is 20 in., the cutting speed varying from 25 to 50 ft. per min., with a return from 50 to 75 ft. per min. The floor space occupied is 36x16 ft., and the net weight without motor is 27½ tons.

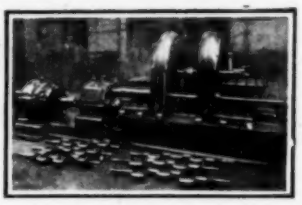
— 64 —

Turning Machines, Crankpin

G. Richards & Co., Ltd., Broadheath, Manchester, England. [Vol.65,p.210E]

Crankpin turning machines in two types, single and double-headed and employing rotating tools which operate on a stationary crank are being made. The single-head machine is for general crank work, while the double-head machine, illustrated, is for turning automobile crankshafts. The latter machine turns two pins simultaneously, roughing out a pair for grinding in about 10 minutes.

The duplex machine will cut crankpins out of rectangular stock not exceeding 10 in. across



the corners. Adjustable worktables are provided on which the crankshaft to be machined is placed, the tables having a traverse of 12 in. The height from table to the center of the work is 11¾ in. An eight-speed gearbox is employed. A two-speed friction clutch is also provided with the box, controlled by a convenient handle.

The single-head machine is suitable for crankpins up to 12 in. in diam. The work is secured on the worktables on blocks at each side of the head, and is clamped on its journals near the pin to be machined. The differential motion in the feed box is controlled by a handwheel; thus feed motion to the tool slide is obtained independent of the automatic feed. Power feed in three rates to the tool slide and also rapid motion for moving the tool away from the work are also available.

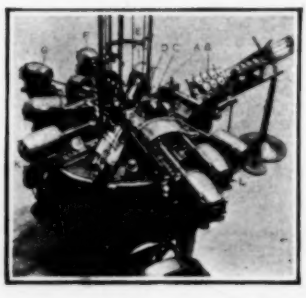
In each machine lubricant is supplied by means of a pump with a tank in the base.

— 65 —

Automatic, Universal, 10-Position

John Ackworthie & Co., Ltd., Coleshill St., Birmingham, England. [Vol.65,p.228E]

A Wuttig universal automatic is shown for the quantity production of small parts for the electrical, automobile, and other industries as, for example, small connectors, spindles, bushings,



and nipples. The parts are produced from drawn rod or coiled wire of any section, as it does not revolve. Stamped pieces can also be handled by means of a magazine from which the parts are conveyed to the chucking head. A circular plate bears ten radially-fixed tool heads, each independently driven by its own motor, and the chucking head brings the work to all the tooling positions in turn, the tool heads working simultaneously.

The wire is chucked, cut to length, centered, operated on by hollow mills, drilled, countersunk and tapped.

The net weight of the machine is about 2,650 pounds.

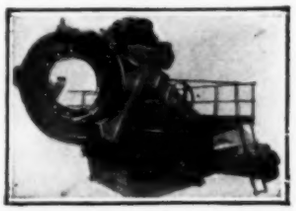
— 66 —

Turning Machine, Crankpin, Large

J. Hetherington & Sons, Ltd., Manchester, England. [Vol.66,p.162E]

This is a large machine for roughing and finishing crankpins of Diesel engines and similer heavy work, the diameters of the pins ranging from 11 in. to 25 inches.

It is claimed for the machine that more accurate crankpins



can be obtained than is possible when they are turned in a lathe where the crank has to be rotated out of center. With this machine the crank is held stationary.

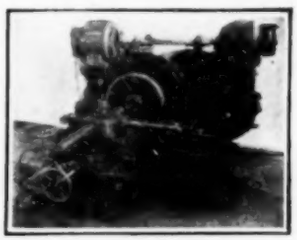
Main drive is by a 15-hp. variable-speed motor, running at 380 to 940 r.p.m., and a two-speed gear box provides the tool head with a speed range from 1.5 to 9.13 r.p.m. Available feeds are ¼ to 1/100 in. per rev. For the longitudinal and transverse motions two motors are used, each of 10 hp. running at 600 r.p.m. and series wound.

— 67 —

Turning Machine, Duplex, Railway-Wheel Center

Armstrong, Whitworth & Co., Ltd., Openshaw, Manchester, England. [Vol.66,p.174E]

This duplex railway-wheel center turning, boring and bossing machine is similar to the



firm's normal type, except for one or two special features.

A central headstock carries two faceplates, 3 ft. 6 in. in diam., each independently driven and controlled. Two ranges of speed are available, giving from 5 to 40 r.p.m. of the spindle, and are changed by means of friction clutches.

Without the electrical equipment the machine weighs about 17 tons. It is claimed that the time for performing the complete operations on a standard wagon-wheel center, facing one side of the boss only, is 35 minutes.

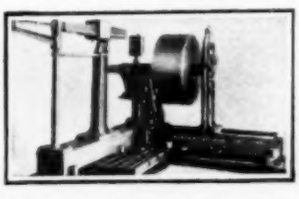
Measuring, Gaging and Testing Equipment

— 68 —

Balancing Machine, Static

J. Buckton & Co., Leeds, England. [Vol.66,p.27E]

The Martin static balancing machine offered by this company is designed to afford a quick, simple and safe method of balancing rotary bodies, such as armatures, rotors, gear wheels, propellers, fans flywheels, and crankchafts. One end of the body is supported by a freely-suspended ball bearing from a rigid standard which can be adjusted along a bedplate,



while its other end rests in a collar supported by an adjustable V-slide, carried by a lever supported at one end on a knife-edge and connected at the other end to a second lever.

The dead-weight of the body is first balanced by means of a poise-weight. When the body is rotated it will displace its center of gravity and upset the balance. A restoring moment is then applied by moving the small poise-weight.

Machines are available to suit all classes of work from bodies of 10 lb. up to 120 tons.

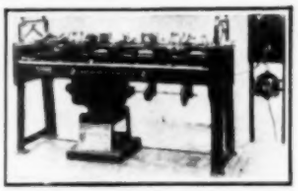
— 69 —

Balancing Machine, Dynamic

W. & T. Avery, Ltd., Soho, Birmingham, England. [Vol. 66,p.59E]

This Liney balancing machine has been specially designed to make dynamic balancing tests on rotating bodies, such as crankshafts, armatures, and grinding wheels. It has two essential parts, a rigid frame standing on the ground, and a trough-shaped casting which is suspended within the frame.

The crank-shaft or other body to be tested is carried by bearings within the trough casting, and is rotated by an electric motor through a flexible



coupling. An out-of-balance correcting device is provided at each end of the machine.

By movement of two levers the angular position of the balance weights can be adjusted as required, the radial position of the weights being varied by two small handwheels. Dial indicators show the oscillation of the floating trough casting, and by an observance of these indicators the operator is informed when a true balance has been obtained.

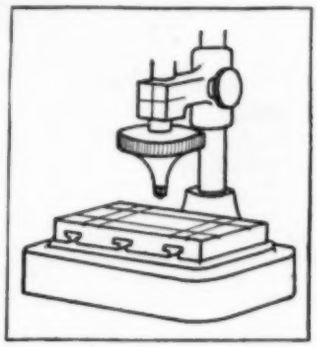
— 70 —

Gage, Fluid

J. A. Prestwich & Co., Ltd., Tottenham, N., England. [Vol. 66,p.101E]

Various standard adaptations are now applied to the fluid gage manufactured by the above company and markted by the Coats Machine Tool Co., Ltd., Palmer Street, London, S.W. The gage now covers a wider range. In place of the narrow anvil all models are now furnished with a large hardened ground and lapped surface-plate which is interchangeable with different bases. The plate also offers a large true surface for employing anvils and V-blocks.

The bases are made in three styles: one has the under face square with the gage-supporting column; another style has the face of the base set at an obtuse angle with the gage-supporting column; while the third style combines the features of the other two and has two collapsible feet carried at the front. With this mounting the maximum capacity of the instrument is 6½ in. high, the standard surface plate being 6 in. by 4 in.



For further facility in setting the gage the fluid chamber has been lengthened. An adjustable back stop is another improvement where cylindrical parts may be more rapidly handled.

— 71 —

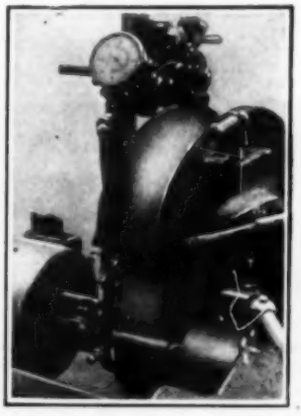
Gage, Grinding

Anton Smit & Co., Clare House, Kingsway, London, W.C., England. [Vol.66,p.129E]

This grinding gage has been developed for rapidly checking the grinding of cylindrical pieces to within very fine limits. The work is measured automatically while the stock is being removed.

With ordinary care the percentage of scrap may be reduced, as the operator cannot grind under size without the gage registering the fact. The instrument is usually carried on the guard of the grinding wheel and is stationary, the work traveling through the gaging points.

A visible check on out-of-roundness and amount of error is available, while the gage also indicates rough grinding or chatter. It is claimed that this gage replaces all sizes of snap gages within its range, saving the expense of adjustment and renewal.



— 72 —

Testing Machine, Tensile

Pneulec, Ltd., Mafeking Road, Smethwick, England. [Vol.66, p.5E]

The machine provides for test bars from 3 in. in length up to the usual standard lengths called for by engineers' specifications. Test bars of the usual

shape with shoulders, screwed ends, or grips, can be accommodated.

The machine is of hydraulic type, using mineral oil, and has a full-load capacity of 12 tons. The pull producing the stress is direct and free from side strains, and in this respect it is claimed to be superior to machines of cantilever type. The working fluid is supplied by a four-throw pump.

The machines are being made up to 60 tons capacity. For loads exceeding 20 tons the pumps are worked by electric motor. The load on the specimen is shown on the gage. When the bar is broken, the grips are returned to the starting point by means of a relief valve controlled by the operator. The machine is about 21 in. square in the base.

— 73 —

Testing Machine, Spring

Coats Machine Tool Co., Ltd., Palmer St., London, S. W., England. [Vol.66,p.6E]

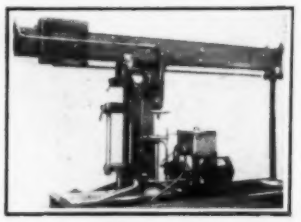
For description see item No. 190, page 106, of the American Section of this issue.

— 74 —

Testing Machine, Vertical, 30-Ton

J. Buckton & Co., Ltd., Leeds, England. [Vol.66,p.28E]

A vertical single-lever testing machine to impose and measure loads up to 30 tons, and arranged for tension, compression, deflection and torsion tests is shown. Specimens are admitted in tension up to a maximum of 20 in. between



grip boxes; in compression up to 20 in. between platens; in deflection up to 60 in. long between supports; and in torsion, up to 8 in. in length and up to 1 in. in diam. The poise-weight for measuring the load is traversed by hand, or by separate motor.

The Buckton-Wicksteed bridle provided prevents injury from shock when a test piece breaks. The straining head is moved by a hydraulic cylinder, the ram being operated by oil under pressure supplied by means of a Hele-Shaw variable-capacity pump. Testing can be carried out at any speed from zero to 6 in. per min. Setting of the straining crosshead position can be done at speeds up to 10 in. per min.

The torsion apparatus will impose any load up to 16,000 lb. It is fitted with a telescopic socket for varying lengths of specimen.

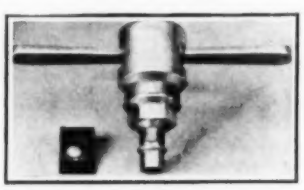
— 75 —

Ductility Tester, Sheet Metal

W. & T. Avery, Ltd., Soho, Birmingham, England. [Vol. 66,p.52E]

The Haas appliance for testing the relative ductility of sheet metal by distention is being introduced by this company. The tool is portable, and is designed especially for shop use.

The sheet metal is inserted between the upper and lower clamping members of the appa-



ratus. To determine the thickness of the metal, the outer member is rotated by means of the handle, until the specimen is tightly gripped. The readings marked on the bevelled edge of the outer member, give the thickness of the metal.

To test the ductility of the metal the hexagonal portion of the small plunger is inserted in a second socket in the bench, and the flat handle is rotated until a dome-shaped bulge is produced by a hardened steel ball inside the apparatus. The height of the bulge is a measure of the ductility of the metal.

— 76 —

Hardometer

Thos. Firth & Sons, Ltd., Sheffield, England. [Vol.66,p. 58E]

The principle embodied in the Hardometer for determining the hardness of metals, is similar to that of the Brinell machine. A hardened steel ball and a pyramidal diamond indenter are provided with the machine.

The machine weighs about 60 lb., requiring only 1 sq.ft. of

bench space, and yet being capable of testing any article which will enter an 8 in. gap.

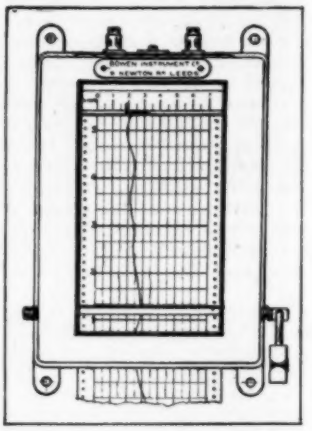
The load is applied by means of a handwheel which compresses a spiral spring until a trip mechanism automatically arrests the handwheel motion. After the impression has been made the load head can be released and swung aside so as to bring a high-power microscope over the impression.

— 77 —

Temperature Recorder

Bowen Instrument Co., Newton Road, Leeds, England. [Vol. 65,p.212E]

The Pyro temperature recorder introduced by this company is a compact instrument



for the continuous registration of temperatures on charts. The attempt has been to eliminate extreme care in handling, special mountings, and frequent repair or suspension after slight accidents.

The outer case is of metal, fitted with hinged glass front, terminals, fixing lugs and padlock. The sensitive moving system is supported on special pivots, which allow the pointer to swing freely, without strain under the action of the depressing mechanism.

The pointer of a pivoted coil projects horizontally over the chart roller. A clock mechanism periodically depresses the pointer, which leaves a fine dot on the chart. The series of dots so formed merge together and produce a practically continuous line of temperatures.

For use with base metal thermo-couples the firm supply recorders calibrated between 0 and 800 deg. C., or 0 and 1,100 deg. C. For platinum, and platinum-rhodium thermo-couples a standard range of 0 to 1,400 deg. C. is supplied. The recorder may also be used with the firm's Pyro radiation pyrometers, the standard range being between 700 and 1,600 deg. C. The machine measures 5½ in. wide and 6 in. deep, and weighs 11 pounds.

Woodworking Machinery

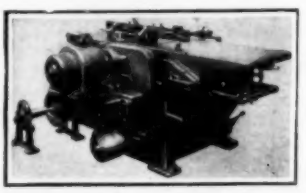
— 78 —

Planer, Motorized, Patternmakers'

Wadkin & Co., Leicester, England. [Vol.66,p.104E]

This company has redesigned its combined surface planer and thicknessing machine to include electric motor drive. The machine is made in two standard sizes, 20x9 in. and 24x9 inch.

The driving motor is carried on a bracket which is bolted to the main frame, as shown in the illustration, the motor being



direct coupled to the cutter block. It is of 5 hp., running at 4,000 r.p.m. The feed motion is driven from the cutter block by means of an intermediate countershaft.

Safety circular cutter blocks are used, the cutting circle being 5 in. in diam., and a device

is provided for setting the cutters quickly from the back surfacing table. The thicknessing table is quickly raised and lowered by means of inclosed spiral gearing and screws, the latter being protected from dust.

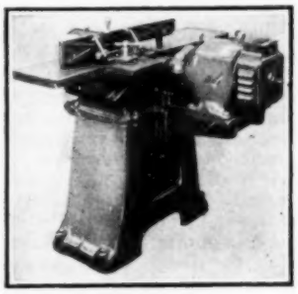
— 79 —

Planer, Surface, Motorized

Wadkin & Co., Leicester, England. [Vol.66,p.104E]

The 9-in. hand-feed surface planer illustrated has been redesigned to include direct motor drive. The machine is equipped with a circular cutter block of skew type, the cutting circle being 5 in. in diameter.

Both tables have draw-cut motion, to enable molding cutters to be employed and also for changing and setting the cutters. The fence works in a dovetailed groove, and can be tilted to an angle of 45 deg.



The motor is mounted on a bracket bolted to the machine and drives through an inclosed oil case containing double-helical gearing.

— 80 —

Saw, Dimension, Motorized

Wadkin & Co., Leicester, England. [Vol.66,p.104E]

The 16-in. dimension saw illustrated, intended for pattern-making work, has been redesigned to include direct electric motor drive. The machine is designed for sawing, squaring-off, mitering, beveling, cross-cutting and rabbeting.

The saw spindle is mounted in heavy ball bearings. The motor is carried on the body of the machine and drives

through gearing. The box carrying the gears is supported in heavy yokes. The saw can be projected above the table, so that grooving and rabbeting can be done.

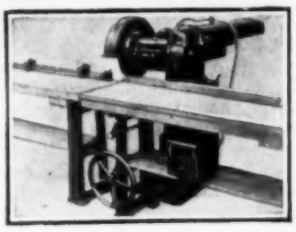
The ripping fence can be tilted to any angle up to 45 deg., and has a quick motion across the table and a fine screw adjustment.

— 81 —

Cross-Cutting Machine, Patternmakers'

Wadkin & Co., Leicester, England. [Vol.66,p.104E]

This company has brought out the straight-line, cross-cutting and trenching machine illustrated. It takes the place of the pendulum or swing saw, and the motor is mounted directly on the saw spindle. It will cut in a straight line timber up to 20 in. wide by 4 in.



thick, either straight or angular, and the saw spindle can be raised or lowered for grooving and trenching.

Saws up to 18 in. in diam. can be used, and the saw and spindle carriage can be pivoted around 45 deg. for angular sawing, while the saw itself will swivel to 45 deg. for cutting compound angles. The saw spindle is carried on ball and roller bearings, and all of the slides are mounted on ball bearings.

The motor is of 3½ hp., mounted on a trunnion so that it can be canted to any angle between the horizontal and vertical.

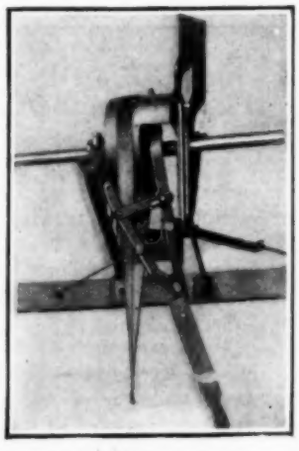
Miscellaneous Equipment

— 82 —

Belt Shipper

J. Broughton, Vere St., Birmingham, England. [Vol. 66,p.20E]

The belt shifting mechanism illustrated is intended to obviate the necessity for a worker to go near the line shaft to replace a belt on the tight pulley, and it is never necessary to stop other machines driven from the same line shaft. It can be used where



only tight pulleys are employed, and takes the place of the loose pulley.

It consists of a hanger, independent of the shaft and carried by brackets, and two operating levers. By moving the primary lever, the secondary lever moves the belt on to the hanger by means of a pin. A reverse movement throws the belt on to the tight pulley. When in the off position the belt is entirely free from the revolving pulley or shaft.

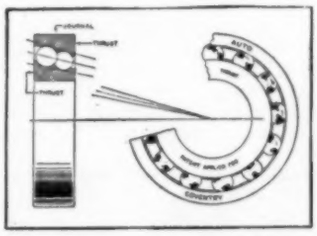
— 83 —

Ball Bearings, Dual

Auto Machinery Co., Ltd., Coventry, England. [Vol.66, p.226E]

In this dual bearing two rows of balls are used, the balls being staggered and of different diameters. One advantage claimed is that the bearing has great journal load carrying capacity, combined with appreciable thrust carrying capacity, the bearing carrying both loads on the two rows of balls.

The applications mentioned include front hubs of motor cars, differential cage bearings, and differential pinion and worm shafts. Bearings of this type will be supplied in sizes



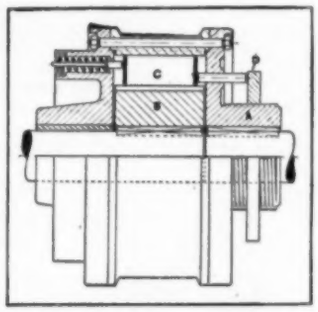
equivalent to the single-row bearings made by the firm, these including metric and inch bearings ranging from ¾ to 6 in. in size.

— 84 —

Coupling, Safety

British Hele-Shaw Patent Clutch Co., Ltd., Oldham, England. [Vol. 66,p.49E]

These safety clutches are made in sizes from ½ up to 1,000 hp., at 100 r.p.m. rating. The smallest diameter is ap-



proximately 7 in., while the largest diameter is 40 in., and lengths are according to the number of disks in the clutch.

The clutches can be set to slip at any desired overload, irrespective of speed. As usually sent out they will slip at 75 per cent overload. The disks are completely inclosed by an outer casing and two end plates. The smallest coupling has seven bronze and steel V-disks 3½ in. in diam., while the largest size has twenty-nine disks, 30 in. in diameter.

The device has been used on electric winches and hoists and may be applied to any machine tool fitted with electric motor drive.

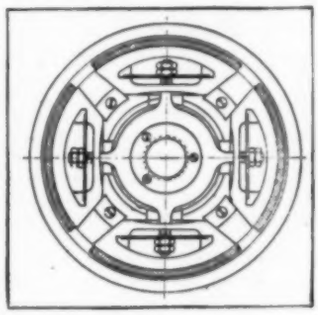
— 85 —

Clutch, Centrifugal

F. Wigglesworth & Co., Ltd., Shipley, England. [Vol. 66,p.88E]

Centrifugal clutches with spring-controlled friction slippers are offered to provide a complete balance with equal pressure and wear on the friction surfaces. The illustration gives an end view.

A floating ring in the center carries four arms with lock nuts which bear on flat springs, one to each slipper. By means of these nuts the tension can be adjusted, and as the ring floats



it tends to equalize the pressure, and hence the wear, produced.

Clutches of this type are being made up to 24 in. diam., to transmit up to 600 horsepower.

— 86 —

Belt-Tensioning Devices

Crofts (Engineers), Ltd., Thornbury, Bradford, England. [Vol.66,p.124E]

This company is now manufacturing a range of belt-tensioning devices employing a pulley swinging on an arm and

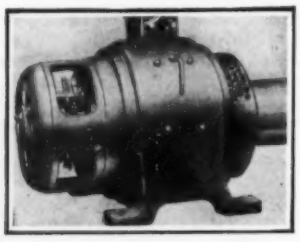
applying the tension required through the dead weight. These devices are used to increase the driving powers of belts by increasing the arc of contact. Thus the center distances required between the pulleys, and hence the space taken up by the driving belt, may be reduced. A decrease of tension in the belt, increase in power transmitted, decrease in belt slip and in load on the bearings are also claimed.

— 87 —

Motors, D.C. and A.C.

British Thomson-Houston Co., Ltd., Rugby, England. [Vol. 65,p.217E]

This company offers a line of motors, from ½ hp. upwards, identical in all essential dimensions and of the same ratings for both a.c. and d.c. circuits.



This standardization should be useful to machine builders.

The alternating - current motors are of the squirrel-cage and slip-ring types, and in all cases they can be supplied either for horizontal or vertical operation. The bearings require practically no attention beyond being refilled with grease about once a year.

Depending on the actual load conditions, a motor for horizontal operation can be used with the shaft a few degrees from the horizontal, while, similarly, a motor for vertical operation can be used with the shaft at a small angle. To meet any requirement for operation at intermediate angles the manufacturers can supply suitable bearings.

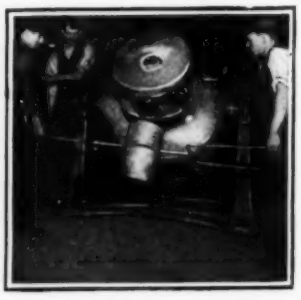
— 88 —

Furnaces, Melting, Oil-Fired

Manometer Manufacturing Co., Ltd., Savoy House, Strand, London, W.C., England. [Vol. 65,p.285E]

This furnace is of 400-lb. brass capacity, but the makers also build larger sizes in capacities from 100 up to 1,000 lb. Plumbago crucibles are employed for melting both ferrous and non-ferrous metals. The body is of cast hematite alloy to prevent warping. Fire brick extends above the metalwork of the furnace and has direct contact with the brick cover.

The output is 400 lb. of brass in 50 min., and it is claimed



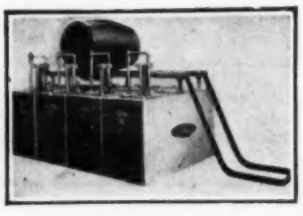
that oil firing reduces fuel cost by one-third, as compared with coke. The air pressure required is 1 lb. per sq.in., the oil being fed to the burner by gravity.

— 89 —

Tanks, Lubricating Oil

Dowson & Mason Gas Plant Co., Ltd., Levenshulme, Manchester, England. [Vol.65.p. 292E]

The tanks illustrated are self-contained with pumps, and are for the storage and delivery of lubricating oils. Similar receptacles are available for gasoline, paint and varnishes. The tanks



are usually of 50 gal. or 100 gal. size, and may be had with or without the barrel hoists.

The installation shown consists of four units, each tank being of 100 gal. capacity. The plunger pump is of rack type with a capacity of 1 gal. per full stroke. Deliveries of half-gallons or quarts can be obtained by the movement of a lever. The whole installation can be built up with as many units as are required. Each tank unit measuring 50 in. by 31 in. by 30 in. high.

— 90 —

Pulleys, Welded

Albert Schneider - Christen, 144 Hammerstrasse, Basel, Switzerland. [Vol.66,p.148E]

Light wrought-iron or steel pulleys are being manufactured by this company with the three parts, the hub, the web, and the

rim electrically-welded into one piece. The hub may be of cast-iron, with a wrought-iron ring where the web joins it in order to secure a sound weld. For the same reason in split pulleys the hub is a steel casting.

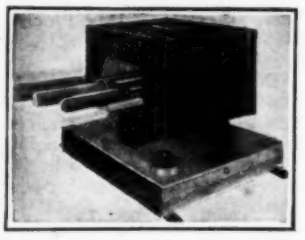
Pulleys built-up in this manner are claimed to be stronger, and the pulleys allow high circumferential speeds up to 250 ft. per sec. Having no spokes, they are thought to be safer and also give rise to but little air resistance, while by reason of their lightness they reduce the load put on shaftings and bearings.

— 91 —

Electric Heater for Soldering Irons

Automatic and Electric Furnaces, Ltd., Farringdon Road, London, E.C., England. [Vol. 66,p.156E]

The electric heater for soldering irons is a tinners stove having a special tipping motion and



a cut-out whereby the current is automatically kept at the minimum. With the switch on, the muffle is kept warm, and the insertion of one or more irons automatically turns on the requisite amount of energy to give rapid heating. The withdrawal of irons proportionately reduces the power. By this method of heating it is claimed that the irons are maintained in a better condition and for longer periods, owing to the absence of gases which attack the copper and result in pitting.

Two sizes are made, having chambers respectively 6½ in. long by 5½ in. wide by 2 in. high, and 7½ in. long by 8¾ in. wide by 3 in. high.

How to Use the Index of Manufacturers

The contents page preceding the review pages is useful for locating a particular type of machine or appliance, the products being grouped according to type.

If it is desired to find what developments have been made by a certain concern, the index of manufacturers will be of value, as it gives a list of the manufacturers for whom new products have been described in the *American Machinist* during the past six months. The index serves to show the activities of manufacturers in bringing out new products, in a résumé form.

In the index, the names of the manufacturers are placed in alphabetical order and under the name of each can be found the products treated in the review pages. The number of the particular item is given with each product to make possible rapid identification and the page number is given as an aid in finding the location of the article.

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NEWS OF THE WEEK

Guggenheim Fund to Aid Promotion of Passenger Air Lines in U. S.

Equipment loan plan suggested for operating companies

AS A RESULT of the great progress in air transport in the United States, the trustees of the Daniel Guggenheim Fund for the Promotion of Aeronautics have authorized equipment loans for the operation of passenger air lines in the United States. Equipment loans are and have been used extensively in the development of American railroad and street railways and the trustees of the fund believe the same principles of financing should be applied to air transport.

The equipment loan plan of the Guggenheim fund will not only provide equipment for the demonstration of performance, but will also provide a concrete example of aeronautical financing upon which further financing can be developed. The loans will be made only to existing operating companies for the purchase of the most modern, multi-engined planes of maximum safety and comfort so that an actual demonstration of performance and safety will be available as an incentive for further development of passenger air lines in the United States.

Planes bought under the equipment loan provision must be designed to fly should one of the motors be disabled. The route or routes over which the new equipment will be flown must be approved for passenger carrying by the Aeronautical Division of the Department of Commerce, which, through William P. MacCracken, Jr., Assistant Secretary of Commerce for Aeronautics, will install on the selected routes the most up-to-date communications and meteorological services.

Preliminary Plans

A survey will be made by the Daniel Guggenheim fund in co-operation with the Department of Commerce and operators of existing air-mail routes for the purpose of selecting the most favorable routes for undertaking this practical experiment. Preliminary arrangements for a discussion of the equipment loans were considered at a meeting of representatives of each of the contract air-mail services in New York some time ago.

Among those who attended the preliminary meeting at the offices of the Guggenheim fund to discuss the equipment loans were: Secretary MacCracken; William B. Robertson and James D. Livingston, of the Robertson Aircraft Corporation; L. H. Brittain, of the Northwest Airways; Harris M. Hanshue, of the Western Air Express; Walter T. Varney, of the Varney Air Service, Boise, Idaho; V. C. Gorst, of the Pacific Air Transport; George P. Tidmarsh, of the Boeing Airplane Co.; C. M. Keys, Carl B. Fritsche and Colonel Paul Henderson, of the National Air Transport; C. H. Biddlecombe, of the Colonial Air Transport; William B. Stout and Stanley Knauss, of the Stout Air Service; William B. Mayo, chief engineer of the Ford Motor Co.; Anthony Joseph, of the Colorado Airways; Maj. Reed Chambers, of the Florida Airways; Clifford S. Ball, of Pittsburgh; G. S. Childs, of the Pitcairn Co.; and Charles Wrightson, of the Varney Co.

Machine Tool Situation in Belgium

By Henri Benedictus
In the European Edition of *American Machinist*

The industrial situation in Belgium remains stationary. There has been no improvement of late, but the position of our various factories has probably not gone worse. The electrical equipment shops are busy, motor-car manufacturers as well, railway material manufacturers are moderately supplied with orders, whereas the shops dealing with structural material are not very busy. Machine tool makers are only working to half or three-quarters of their capacity. Notwithstanding this, there have been a few sales of machine tools lately, mostly to repair shops. A number of second-hand machines have also been sold. The bulk of new machines that have been sold are of German make; German manufacturers, in fact, seem to be gradually getting back into their old position. The improvements they have made justify their success and, while the business is not very large, still practically every special new machine at the present moment bought in Belgium comes from Germany. The German manufacturers have in many instances reduced their prices to the utmost limit and in many cases they are considerably lower than the prices of machines of French make, which, after all, do not always come up to the German standard. Under these conditions preference is given to the German manufacturers.

For instance, in punches and shears the German prices are considerably lower today than the prices of the French makers and it is the same with a number of machines. For the ordinary run of machines, however, such as lathes, shapers and drilling machines, Belgium is now producing medium lines and the importation of these machines is becoming more and more difficult, unless when, in exceptional cases, high production machines are required.

English Prices High

The English machine tool makers do not get much business, because their prices are very high. In some cases British machines might be sold, but they cannot compete with the German machines as regards prices in our market. Besides, as before stated, the German manufacturers have today made considerable progress and their machines are really and justly appreciated.

As regards American machines, there are very few sold. Prices to-day in America are very high, and as Belgium is not a market of intensive production there is no great demand for the latest high-production machines built in the United States. A number of second-hand American machines are being sold at reduced prices.

Citroen Leads Auto Makers in Europe

With a production approximating 400 cars daily, Andre Citroen, of Paris, France, is probably the largest foreign builder of automobiles, says a report to the Department of Commerce.

In his concentration upon a single model, in his policy of building a good car at a low price, in his manufacturing and merchandising methods Citroen is said in Europe to embody American ideas.

The Citroen car itself might be described as semi-American, for a large part of the items which go to make it, aside from management and labor, come from the United States. Practically all of the specialized machines used in its production are American; its all-steel body is made under an American system from sheets imported from the United States; it is painted by an American process; some of the very buildings in which it is manufactured have been designed by American engineers. With due consideration given these matters, however, the Citroen automobile as a finished product is a distinctly European car—small, light, low-powered.

The Business Barometer

This week's outlook in Commerce, Finance, Agriculture and Industry

By THEODORE H. PRICE
Editor, Commerce and Finance, New York

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WHAT might be called the business complex in the United States is becoming very confusing, and it defies any attempt at generalization. The foreign bankers who were here in conference with our Federal Reserve Officials have gone home. No specific announcement of the conclusions that may or may not have been arrived at has been made, but there is an instinctive feeling that their deliberations may have resulted in an understanding that will be helpful in any financial emergency that may hereafter arise, and the effect has been, upon the whole, reassuring.

It is to this feeling that the steadier tone of the stock market is probably attributable. The average of quotations does not indicate any revival of speculation, but it reflects an abatement of liquidation and a discriminating demand for good dividend paying securities. The same statement is applicable to the bond market, where the many issues that were recently "unpegged" are finding buyers at concessions which bring them into line with the other better seasoned securities. Brokers' loans have receded and though still high they are now the lowest in nearly two months.

Perhaps it would be too much to say that the way has been opened for a resumption of speculative activity in stocks and bonds, but it is evident that the nervousness previously felt in some quarters has been allayed, and that it will not further impede the assimilation of the many undigested issues that have been recently brought out.

In the field of commerce, as distinguished from that of finance, the same serenity prevails. The merchandise turn-over is, upon the whole, somewhat smaller than it was a year ago, but the decrease is not important, and most authorities seem to expect good trade next autumn unless the harvest is very disappointing or the prices at which our agricultural production can be sold decline seriously.

The out-turn of the wheat crop promises to be better than was expected a month or six week ago, and the price of wheat in Chicago is slightly lower, but it is still comparatively high. Corn is, however, still selling at well over a dollar on reports which indicate a very poor crop, but the Argentine continues to ship us some small cargoes of corn, and hogs are so low that there can be no profit in fattening them with corn that can be sold for a dollar a bushel. Therefore, it is quite possible that we may have seen the top for corn despite the threatened shortage in the yield.

WHAT'S DOING IN INDUSTRY

SLIGHT increases in sales activity in some of the Mid-Western industrial centers gives a more encouraging outlook to the machinery and machine tool trade. So far, the month of July has not shown anything but the expected signs of summer dullness, but there is some good equipment business pending the release of general industrial activity.

DETROIT reports a sudden spurt in demand for tools, and prospects of sales to the automobile builders are better than in several weeks. Business is fair in Cincinnati, though made up of small, scattered orders. Manufacturers of planers and presses in the Cleveland territory are busy, but other lines are dormant. The inactivity in Milwaukee is monotonous, but some good business is in prospect.

NEW ENGLAND is making progress on the strength of recent aircraft development, and some railroad demand is also helping. New York reports the closing of some old business. Things have quieted down in Buffalo, only some special machinery builders being active. The Philadelphia market is dull but hopeful.

FIGURES just issued by the National Machine Tool Builders' Association show that the Index Number for June reached 137. This offers an encouraging comparison with 125.8 for May and 125.5 for April.

Cotton is firm and looks as if it might go higher. The United States consumption for June was the largest on record for any month, with one exception, and the government report on acreage has furnished the crop killers with a foundation upon which a very bullish structure can be erected. But the dry goods market has made a very reluctant response to the advance in futures, and manufacturers will probably follow a hand-to-mouth policy in buying their supplies until they become convinced that the crop will really be a small one. Sellers are, however, scarce and it will be comparatively easy to advance futures by the execution of comparatively small buying orders.

The market for raw wool is said to be firm, but the demand for woolen fabrics shows a seasonal slackness. Sugar is looking decidedly better. The drouth in Cuba is unrelieved and Europe has bought Cuban sugar very freely. Unless statistics are valueless, sugar ought to sell higher before the end of the year. Coffee rallied slightly early in the week but it is commencing to slip back.

The demand for steel continues subnormal, and the mills are commencing to complain that orders, though numerous, are small. The price tendency of both pig iron and steel seems downward, but the industry has itself well in hand, and a serious decline seems improbable.

Some of the automobile companies are reporting satisfaction in sales, but others are not doing so well, and the total production, as well as the aggregate sales, is still under last year. The trade is waiting for the new Ford car, and announcement that $15,000,000 would be spent in advertising it has created some perturbation among the dealers. But it is not yet definitely known when Ford's new creation will be upon the market.

Distributive trade has been about as usual during July. Car loadings are slightly under last year. The relatively cool weather that prevailed until recently has left merchants with stocks of seasonal goods that are rather large, and winter buying is not expected to commence until August, when more will be known about the out-turn of the crops.

The coal strike continues, and may be extended to include fields that were not previously affected. But no one seems to pay much attention to it.

Viewing the world outlook in its entirety, its most salient feature is the need of reciprocity between the nations, and if this can be attained by bankers' conferences or otherwise, great progress toward the stability of business and of values will have been made.

The Industrial Review

Weekly progress of the machinery and machine tool business

THE following reports, gathered from the various machinery and machine tool centers of the country, indicate the trend of business in these industries and what may be expected from the future:

PHILADELPHIA

The possibility some of the leaders in the automotive industry will shortly announce new models and thus stimulate buying, was one of the hopeful signs among machinery and machine tool dealers in Philadelphia this week. Spokesmen for leading producers said they were looking for some important announcement by late summer, and if changes are made it will be a benefit to the industry.

This was the feature of the situation in this market, which otherwise was dull and with little other prospect of a revival. Firms engaged in the woodworking machinery line reported a few orders from mills, and there was some buying among public service companies from the Mid-West. There have been a few inquiries, but these are not as brisk as had been anticipated earlier in the year, and few of them give any hopeful signs of early buying.

NEW YORK

The closing of some business that had been pending for several weeks has resulted in the appearance of a slight flurry in this market. But the condition is not general, being confined to two or three firms who signed up orders that will bring their total volume for the month up to a good figure. One such order was placed by the Baldwin Locomotive Works for 44 ten-ton electric overhead cranes and 13 crane bridges for the Eddystone plant. Another order placed with a dealer called for three radial drills, two internal grinders and five lathes.

The number of inquiries has decreased to the point where the effect is being felt greatly by those dealers who depend on these leads for business. Large users of equipment are still marking time, waiting for further developments in the industrial situation. R. Hoe & Co., the Page Engineering Co., John Bath & Co., the Western Electric Co. and the Ford Motor Co. were mentioned as buyers of tools last week, although none of the orders were for more than two or three pieces. Little improvement is looked for in the next few weeks, as dealers and agents seem to have caught the vacation spirit and selling activity has dropped with the rise in temperature.

BUFFALO

The machine tool trade in Buffalo generally is quiet. Bids are to be opened and contracts awarded soon for some equipment for vocational and technical training schools, but aside from this there are no orders of any considerable size in sight. The slight signs of activity noted recently have subsided practically to the ordinary level which has been prevalent since the first of the year.

Activity in the electrical equipment end of the business is about the same as in the machine tool trade, perhaps a shade better. Several dealers in all branches reported various months of this year as exceeding in business the corresponding month of last year. The contractors' equipment field is probably worse than it has been any time in two or three years, partially because of price cutting.

H. W. Wendt, president of the Buffalo Forge Co., reported business for the first six months of the year to be 10 per cent above that of the same period last year with every expectation that this rate would "hold good throughout the year." All of this company's lines are uniformly good.

Hans Buerk, of the Buerk Tool Works, reports orders booked far ahead, largely for special automotive manufacturing equipment.

NEW ENGLAND

Business recently placed in the New England territory shows better demand emanating from the railroad and automotive industries. Orders placed were principally for replacement and were largely of single units.

Hartford, at the present time, is one of the brightest spots of the machine industry. The Pratt & Whitney Aircraft Co., being in receipt of orders aggregating $1,500,000 for engines and spare parts, is planning to increase its production schedules. Te present working force of 250 will be increased 50 per cent and changes in the plant are being made. Present production is at the rate of 25 engines and spare parts monthly. In the next four or five months this will be worked up to 35 engines and parts monthly.

Contract machinists have a substantial volume of business and special machinery builders are especially busy.

CINCINNATI

The majority of machine tool manufacturers in the Cincinnati district report that, taking the season into consideration, business was fair in the past week. Selling agents report that there was a slight falling off in the local demand, but no more than usual at this time of the year.

The greater portion of the orders booked during the week were placed by machinists and general users. The buyers were well scattered over the country and their purchases were well diversified as to sizes and types of tools. A few single orders came from railroads and a small number of single purchases came from the automotive field. Several small export orders were received, some from England and others from South American oil fields.

Manufacturers report that inquiries came in freely during the week, from all sections of the country and for all sizes and varieties of tools, the principal inquiries being from general users and small machinists. Inquiries from the automotive field and from railroads were confined to single tools and replacements.

Factory production was maintained during the week at practically the same level as it has been for some time.

DETROIT

After an extended period of dullness, the market for machinery and machine tools in the Detroit district took a sudden turn for the better last week. Business has suddenly become much better and the general feeling indicates that it will continue to improve. Last week there was a decided note of optimism here for the first time in many weeks, but this week the optimism is based on something more definite than expectations. Some large orders have been placed by the leading automobile plants and many other large ones are on the way.

A large percentage of the equipment now being purchased is refining equipment, machines for extremely fine and accurate work. Many of the automobile companies are changing over their equipment to meet new conditions and new demands resulting from the intense competition.

Nearly all of the large concerns are bringing out new models, some of them with sweeping changes and others with less noticeable but nevertheless important improvements. Dodge, Paige, Chrysler, Ford, Buick, Reo and Cadillac are among the cars that are planning changes or have just made them. These new models necessitate a great deal of machinery adjustment. But business is highly competitive and price is a more important factor than ever before.

MILWAUKEE

There has been no relief from the monotony of quiet business in the metal working equipment industry, even inquiry being slack. The trade looks for a turn for the better, however, as the result of the relatively low level of buying for the past six to eight weeks, during which time many purchases have been deferred.

In view of the slack demand in recent weeks, it is rather surprising to witness the continuation of production at the rate to which it is holding. It is true that deliveries continue to exceed new bookings, but it has not been found necessary to curtail either working forces or operating schedules. On the other hand, unless orders become more frequent, the present rate cannot be maintained for long.

Export trade, while not unusually heavy, becomes more and more imposing as domestic demand slackens. Local manufacturers of tools are cultivating the European market with increasing success. There is a fair movement of used tools, with a small accumulation of the supply.

CLEVELAND

With one or two exceptions, the local machinery and machine tool market remains dormant. Buyers are conservative in their purchases; only tools for immediate needs are being purchased. The largest order of the week was from the Cleveland Electric Illuminating Co., for five tools for its new westside shop.

June in some instances showed a decline of as much as 25 per cent under 1926. July to date is not showing much life.

The exceptions to the general reports of poor business come from manufacturers of planers and punch presses. The former report June as being the best month since wartime. Five open-side planers were sold during the past month. This branch of the industry has been working a night shift since last fall. The punch press division is enjoying good business. Steel fabricators are furnishing the bulk of the business.

CHICAGO

Midsummer finds the machine tool market less depressed than had been expected. The slight improvement noted last week has been generally maintained. Business is spotty, however, and where one machinery house reports fairly satisfactory sales there are found two who tell of little business being done. Demand for electrically operated tools has declined somewhat, but on the whole is fairly active. Demand for standard metal working machine tools for heavy duty shows litttle improvement over last week.

Personals

JAMES D. SUMMERS, of Los Angeles, has been appointed Aeronautic Trade Commissioner.

CLAYTON LANE has been appointed assistant chief of the division of regional information of the Department of Commerce.

JAMES CLARK, JR., president of the Jas. Clark, Jr., Electric Co., Inc., of Louisville, Ky., sailed for Europe on June 20. He will remain abroad for about three months.

GEORGE F. PAIN, district manager in Philadelphia for the Allen-Bradley Co., has moved into new offices at 600 South Delaware Ave., Philadelphia.

M. J. HARKLESS has been appointed sales engineer of the contractors' department of the Independent Pneumatic Tool Co., of Chicago. He was formerly associated as an engineer with the Buda Co.

OLLIE M. BUTLER, formerly U. S. trade commissioner at Manila, P. I., has been appointed manager of the Detroit office of the Bureau of Foreign and Domestic Commerce.

D. D. KNOWLES, inventor of the Grid Glow Relay, has been awarded the John Scott Medal. Mr. Knowles is connected with the laboratories of the Westinghouse Electric and Manufacturing Co.

W. IRVING GLOVER, second assistant to the Postmaster General, and Eugene R. White, superintendent of foreign mails, will represent the United States at the International Bureau of the Universal Postal Union, meeting at the Hague, in September.

CHARLES R. TRIMMER, district manager in the Michigan territory for the Hannifin Manufacturing Co., of Chicago, has been made a vice-president of the company. He will have charge of sales and will be located in the Chicago office.

R. L. LOWDER has been appointed district manager of the Atlanta branch of the Link-Belt Co. to succeed I. H. Barbee, the change to be effective on Sept. 1. Mr. Barbee will be transferred to the engineering sales division of the H. W. Caldwell & Son plant of the Link-Belt Co. in Chicago. Mr. Lowder has been identified with the company the past 12 years in the sales department of the Philadelphia branch.

Obituaries

W. G. JARRELL, president and manager of the Jarrell Machine Co., of Charlotte, N. C., died on June 21.

ARTHUR V. HANNIFIN, treasurer of the Hannifin Manufacturing Co., of Chicago, died in that city on July 4.

FRANK E. HARRISON, for many years New York representative for the John Bath Co., the Contour Broach Co., and the Eclipse Counterbore Co., with offices at 56 Pine St., died on July 13 after a short illness. Mr. Harrison was well-known among machinery men, having at different times been associated with Manning, Maxwell & Moore, and with the Brubaker Co.

FREDERICK J. KINGSBURY, chairman of the board of directors of the Bridgeport Brass Co., Bridgeport, Conn., died on July 11 at his home in New Haven, Conn. Mr. Kingsbury was born in Waterbury, and was 64 years old. He was formerly connected with the Aluminum, Brass and Bronze Co., of Bridgeport, which was absorbed by the Bridgeport Brass Co. He was at different times treasurer, general manager and president of the latter company. He was also a director of the Scoville Manufacturing Co., president of the A. P. Swoyer Co., of Philadelphia, and treasurer and secretary of the Bridgeport Electric Manufacturing Co. He was prominent in financial circles and a director of the First National Bank of Bridgeport and the Union Trust Company of New Haven. He was for ten years president of the Morris Plan Bank of Bridgeport.

Business Items

The Kent Machine Co., of Kent, Ohio, announces the removal of its offices and factory from Kent to Cuyahoga Falls, Ohio.

The Graybar Electric Co. has opened its new branch at 1531 First Ave., North, Birmingham Ala.

The W. A. Ragsdale Rotary Engine Co. will establish a plant at New Orleans for the manufacture of a newly invented type of steam engine.

The Circle Corporation, of Tulsa, Okla., has been appointed representative for the Foote Bros. Gear and Machine Co., of Chicago.

The T. J. Lane Equipment Co., of Springfield, Ohio, has been appointed sales representative in the Ohio territory for the Lakewood Engineering Co., of Cleveland.

The P. I. Perkins Co., of 110 High St., Boston, Mass., has been appointed representative in the Boston territory for the Pennsylvania Pump and Compressor Co., of Easton, Pa.

The Massachusetts Airways Corporation, of Springfield, Mass., has been appointed distributor for the "Eagle Rock" airplane, manufactured by the Alexander Aircraft Corporation, of Denver, Col.

The Charlotte Leather Belting Co., of Charlotte, N. C., announces the appointment of the Jordan Belting Co., 430 Water St., Norfolk, Va., as distributor of the Charlotte line of transmission belting in that territory.

The Gulf States Steel Co., of Birmingham, Ala., announced plans recently for the construction at Gadsden, Ala., of one of the largest blast furnaces in the world, the new furnace to have a capacity of about 500 tons of iron per day.

The Vandyck & Churchill Co., machine tool dealer, of 52 Vesey St., New York, announces the removal of its Philadelphia office from North 13th St., to Juniper and Arch Sts. Earl Wagner is manager of this office.

The Charles F. Elmes Engineering Works, of Chicago, have established an export office in New York City, at 30 Church St. This office will be in charge of Paul H. Petersen, who will be exclusive agent for all territory outside of the United States.

The Niagara Machine and Tool Co., 683 Northland Ave., Buffalo, N. Y., announces plans for a large addition to its present plant. This is primarily intended to consolidate some departments and effect economies in production. It will also take care of some expansion of volume.

The Lincoln Aircraft Corporation, of Lincoln, Neb., has purchased a controlling interest in the Swallow Airplane Co., of Wichita. Those in control of these two concerns are planning the establishment of a North-South airline from St. Paul to the Gulf of Mexico.

Sachs Bearings, Inc., has opened an office at 114 Liberty St., New York. This company represents in the United States and Canada the Fichtel & Sachs Co., of Schweinfurt-on-Main, Germany, manufacturer of ball and roller bearings, steel balls and coaster brakes.

The Merrill Machinery and Supply Co., of Merrill, Wis., has purchased equipment for a new department to manufacture wire goods of all kinds, as well as producing dies and tools. W. A. Talcott, formerly of South Bend, Ind., has assumed charge of the new department as general superintendent.

The Powers Regulator Co., of Chicago, manufacturer of automatic temperature controlling apparatus for industrial plants, announces the discontinuing of the branch at Charlotte, N. C., and the opening of a new branch to handle the Southeastern trade, in Atlanta at 315 Bona Allen Bldg., with Frank E. P. Klages in charge as district manager.

The Bellanca Airplane Corporation of America, which is headed by Giuseppe M. Bellanca, designer of the ocean-spanning "Columbia," has moved into its new quarters at Arlington, Staten Island. A dozen buildings formerly occupied by the Downey Shipbuilding Corporation, which built ships during the war, are occupied, and airplane construction will start at once.

The D. E. Whitton Machine Co., of New London, Conn., manufacturer of steam turbine and governing apparatus, recently named several additional sales representatives in the Southeast, including the Hoshall Machinery Co., Fidelity Trust Bldg., Memphis; Quin W. Stuart, American Trust Bldg., Birmingham; and J. W. Fraser & Co., Commercial Bank Bldg., Charlotte, N. C.

The Connecticut Electric Steel Co., of Hartford, Conn., idle since 1919, has been leased by John D. Scott. Plans are being formulated for the manufacture of high-grade steel castings. The organization will include J. P. Mannix, formerly of the General Electric Co., Lynn, Mass.; H. P. Butters, Connecticut Light and Power Co.; and Harry Lassey, of the Chapman Valve Co., Springfield, will have charge of the foundry. John D. Scott, well-known metallurgist will head the force.

The Air Reduction Co., Inc., of 342 Madison Ave., New York, has purchased the business, insofar as the manufacture and sale of oxygen, acetylene and kindred products are concerned, of the United Gas Improvement Contracting Co., a subsidiary of the United Gas Improvement Co., and the United Oxygen Co., of Philadelphia. The purchase includes oxygen plants at Philadelphia, Chester, Milton, Enola, and Reading, Pa., and an acetylene plant at Bridgeport, Pa. Thus, the Air Reduction Sales Company, the sales organization of Air Reduction Company, Inc., has acquired through this purchase the production and distribution facilities of five additional oxygen plants and one acetylene plant in the industrial district of eastern Pennsylvania. The company now operates thirty-four oxygen plants and nineteen acetylene plants.

Forthcoming Meetings

Steel and Power Show. First Steel and Power Show in the Varsity Arena, Toronto, Canada, sponsored by the Montreal and Toronto Chapters of the American Society for Steel Treating; by the Canada, Toronto and Hamilton Councils of the Universal Craftsmen's Council of Engineers; by the Engineers' Mutual Benefit Fund; the American Electroplaters' Society; and the Canadian section of the American Welding Society. Aug. 31 to Sept. 2. General chairman, C. Bradshaw, 153 University Ave., Toronto, Canada.

American Railway Tool Foremen's Association. Fifteenth annual meeting, Hotel Sherman, Chicago, Aug. 31, Sept. 1 and 2. G. G. Macina, secretary, 11,402 Calumet Ave., Chicago.

Machine Tool Exhibit. Seventh annual machine tool exhibition under the auspices of the New Haven Section of the American Society of Mechanical Engineers, the Department of Mechanical Engineering of Sheffield Scientific School, Yale University, and the Chamber of Commerce of New Haven: At the Mason Laboratory, Yale University, Sept. 6 to 9. Harry R. Westcott, chairman of the exhibit committee, 400 Temple St., New Haven, Conn.

American Society for Steel Treating. Ninth annual convention and national steel exposition, Detroit, week of Sept. 19. W. H. Eisenman, secretary, 4600 Prospect Ave., Cleveland.

Machine Tool Builders' Exposition. First annual machine tool exposition, conducted by the National Machine Tool Builders' Association, at the West Annex of the Public Auditorium, Cleveland, Ohio, Sept. 19 to 24. J. Wallace Carrel, vice-president and general manager, the Lodge & Shipley Machine Tool Co., Cincinnati, chairman of the exposition committee. Roberts Everett, manager of the exposition, Pennsylvania Bldg., New York. Ernest F. DuBrul, general manager of the association, 826 Provident Bank Building, Cincinnati, Ohio.